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ABSTRACT

This packet of research information for educators consists of 13 reports including the following: (1) "What Secondary School for My Child?" describes the problems Australian parents face in selecting either a government or a non-government secondary school: (2) "Who Gets to Teach?" examines factors in the selection and training of primary teachers: (3) "TV and School Achievement? A Real Poser" discusses research evidence about the impact of television viewing in the home on school performance: (4) "Onside with Online" describes the United States' on-line information services which have increased the volume of New Zealand information: (5) "Testing the Reading Comprehension of Second Language Beginners: An Integrative Approach": (6) "Teachers' Centres: Premise or Premises?" (7) "The Same Mistakes: But More Often" studies and compares the English speaking performance of second generation Samoan children born in New Zealand and native English-speaking children: (8) "The Promotion of Women in the Teaching Service" analyzes their under-representation in senior positions: (9) "The Foundations of School Testing" discusses test validities, reliabilities, and usability: (10) "Learning Time and Teaching for Mastery:" (11) "Beginning Teachers: Modern Day Robinson Crusoes:" (12) "The Microcomputer in School:" and (13) "Wanted: Gifted Teachers for Gifted Kids." (RL)

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* Item 1

Contents Sheet

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Item 2
(A)

What Secondary School for My Child?

set research information for teachers
number two 1980

Elaine P. Atkinson
Monash University

John M. Atkinson
Rusden State College

At the beginning of each year thousands of children transfer from primary to secondary school. In some Australian states this transfer occurs between Year 7 and Year 8; in other states between Year 6 and Year 7.

Parents have to select either a government or a non-government secondary school.

In Victoria, parents may select a government high school, a government technical school, a non-government independent school, or a non-government Catholic school. Choice is often restricted by residential zoning regulations applied to government and Catholic secondary schools. In country areas there is often only one school available. Here are some comments by parents on the problems of choosing:

> Year 6 children are usually too young to know what occupation they will do, so how do we decide what type of school to choose?
>
> Poor schools within the zone had a big influence on what school I finally chose.
>
> I would appreciate having some information about government schools available to children in this area. A brochure distributed to primary schools for children in Year 6 would be most helpful.
>
> We found it a difficult decision whether to choose a high or technical school. It would have been easier if we felt that transfer from one school to another was easier at a later date. We were told it was difficult to transfer to a high school at a later date.
>
> Parents find it *impossible* to discover the standing of technical education compared with high school education. It is *assumed* by all that private schools offer better education. Is this so? Some information circulated to parents is overdue!!
>
> The prerogative of free-choice of school should not be available *only* to a fee paying parent of an independent school.

In a recently completed study, *Transition in Education in the Frankston Region*, the 264 primary and 92 secondary government and non-government schools in the Frankston Region were asked to contribute information and over 3000 parents of Year 6 children from 182 primary schools completed a questionnaire that explored issues of secondary school choice.

Was it a Difficult Decision?

Just over one-third of all the parents had difficulty in deciding on a school. Approximately 10 percent of all the parents found it very difficult. The main sources of difficulty were:

> the variations in fees and other charges between (and within) the various school systems (this was the most frequently mentioned);
>
> the difficulty of predicting what type of education would be best for their child;
>
> insufficient information about some secondary schools;
>
> transport and travelling distance issues;
>
> dissatisfaction with the particular school for which they were zoned, despite a general preference for that school system;
>
> the difficulty of deciding between high school and technical school education, or of deciding between high and non-government systems of education.

Parents found it easier to make the decision if older children were already at (or had been at) the secondary school they selected. Parents often seem to choose a school for the family rather than for the individual child. While there are many benefits in this, perhaps some parents need encouragement to consider the individual needs of their children more carefully and assistance to do this.

What Factors Were Considered Important?

Before the questionnaire for parents was written, interviews were held with 61 parents of Year 6 children, and they were asked what factors they considered influenced them in selecting a secondary school. The 23 factors they mentioned were used in the questionnaire. Parents were asked to indicate how much each of these factors had influenced their decisions.

The results (in Table 1) were not unexpected. More than 80 percent of all parents considered the first 13 factors important, but there was a marked variation in the relative importance they gave them.

There were differences in the relative importance given to these factors by parents selecting different types of schools.

Parents selecting government schools (compared with parents selecting non-government schools) were more likely to have considered as being very important: 1. the type of career/ job the student might follow, 2. whether a child was better with his/her hands or his/her head, 3. the cost of educating a child at the school. They were less likely to have considered as very important: 1. the values which the school emphasised, 2. the school's religious affiliations.

Parents selecting government high schools (compared with parents selecting other school systems) were more likely to have considered as being very important: 1. the Year 6 student's own preference, 2. the travelling distance to the school, 3. school zoning restrictions.

Parents of children selecting non-government Catholic schools (compared with parents selecting other school systems) were more likely to have considered as being important: 1. whether the school is a government or non-government school, 2. the school's religious affiliations.

Table 1 *Percentages of parents indicating factors as important influences in the selection of a particular secondary school.*

Factor that may have been considered when selecting a particular secondary school	This factor was considered to be: Very important	Of some importance
	%	%
1 The type of education program offered throughout the school	85	9
2 The approach to discipline in the school	80	13
3 The values which the school emphasises	77	15
4 The facilities at the school	73	19
5 The school's reputation in the community	70	21
6 The type of Year 7 program offered at the school	66	21
7 The suitability of the school for the type of career/job the student may follow	66	22
8 The school's academic results, particularly at H.S.C.	58	28
9 The desire to leave career/job options open as long as possible	54	29
10 The year 6 student's own preference	50	34
11 Whether the child is better with his/her hands or his/her head	49	32
12 Travelling distance to school	46	37
13 The cost of educating a child at the school	43	36
14 Whether the school is a government or non-government school	27	26
15 The school's religious affiliations	26	28
16 School zoning regulations	24	30
17 The recommendation of the primary school	24	33
18 Whether the school is single sex or co-educational	17	27
19 The recommendation of friends or acquaintances	10	31
20 The fact that self/relatives had attended the school some time ago	9	12
21 The recommendation of friends of your Year 6 child	7	19
22 The recommendation of relatives	6	17
23 The number of children from immigrant families at the school	4	13

Parents of children selecting government high schools or non-government independent schools (compared with parents selecting other school systems) were more likely to have considered as being very important the school's academic results, particularly at Higher School Certificate.

The questionnaire gave parents a chance to write-in any other factors they had considered. Twelve percent of them did so, mentioning:

siblings already at the school (this was the most frequently mentioned);
the frequency of strikes in government schools;
school size;
class size;
staff dedication;
staff turnover;
the extent of parental involvement encouraged.

Where Was Information Obtained?

In recent years schools have increased the number of ways in which they provide parents with information to help with secondary school choice.

Parents in the Frankston Region were asked how much information they received from each of 14 possible information sources suggested during the preliminary interviews.

Table 2 *Percentages of parents indicating major and minor sources of information about a school before that particular school was chosen*

Source of Information	Before the school was chosen this was: a major source of information	a minor source of information
1 Sons/daughters/relatives who had recently attended or are now attending the school	36	6
2 Friends & acquaintances whose children are attending or had attended the school	31	21
3 Information night(s) held at the secondary school	20	7
Organised day visit to the secondary school for		
4 — Year 6 students	19	7
5 — parents of Year 6 students	17	6
Information brochure about the secondary school		
6 — issued to Year 6 students by the primary school	18	14
7 — available at the secondary school	15	9
8 — available at the primary school	14	12
9 Information night held at the primary school	15	8
10 Response to letter or telephone call to the secondary school	13	6
11 Local newspapers	4	14
12 Information brochure about the secondary school — issued to Year 6 students at the secondary school	9	7
13 Self/relative who had attended the school some time ago	9	5
14 Response to letter or telephone call to the primary school	6	5

The importance of friends and acquaintances, and sons/ daughters/ relatives as information sources is evident. This may be because of a shortage of useful information from other sources. Twelve percent again added other information sources, mentioning as important:

the Church;
the primary principal;
the secondary principal;
teacher friends.

Technical schools, it appears, provide more very important sources of information than the others.

What Additional Information Was Wanted?

Parents were asked to say what more they would have liked to know about the schools before they selected one. The main things mentioned were:

the subjects offered throughout the school, particularly in higher years (this was the most frequently mentioned);
the discipline in the school;
the facilities provided;
class size;
staff competence;
the values or goals the school emphasised.

Perhaps friends and acquaintances, and sons/ daughters/ relatives are the most important information sources, because they provide information about these things. It may be that schools feel they are better able to provide this information than are friends, etc. The questionnaire did not explore what information parents already had about schools so that is not the full range of information parents want.

How Can a Greater Matching of Information Sought and Information Provided be Accomplished?

Parents would like more information, and different information, about secondary schools than they get now. If there was a closer matching between what they want and what schools provide, parents would be able to make more informed secondary school choices for their children.

What Can Schools Do?

1. Brochures, developed by the secondary school, and containing information about the school, can be:
   (a) distributed to the feeder primary schools and given to all Year 6 students, or students who will be attending that particular secondary school;

Table 3 *Major information sources (i.e., important for more than 20 percent of the parents deciding to send their Year 6 children to a particular secondary school system).*

Major information sources			
government		non-government	
high schools	technical schools	Catholic schools	independent schools
sons/daughters/relatives who had recently attended or are now attending the school (40%)	information nights held at the secondary school (35%)	sons/daughters/relatives who had recently attended or are now attending the school (38%)	friends and acquaintances whose children are now attending or have attended the school (38%)
friends and acquaintances whose children are now attending or had attended the school (30%)	sons/daughters/relatives who had recently attended or are now attending the school (31%)	friends and acquaintances whose children are now attending or had attended the school (38%)	response to letter or telephone call to the secondary school (30%)
	information brochure about the secondary school issued to the Year 6 student at the primary school (29%)	response to letter or telephone call to the secondary school (23%)	sons/daughters/relatives who recently attended or are now attending the school (26%)
	organised day visits to the secondary school for — Year 6 students (26%) — parents of Year 6 students (24%)		organised day visits to the secondary school for parents of Year 6 students (21%)
	friends and acquaintances whose children are now attending or had attended the school (26%)		information brochure about secondary schools available at the secondary school (21%)

(b) given to Year 6 students who will be attending that particular secondary school when they visit the secondary school at Orientation Day in December of Year 6;
(c) given to Year 7 students at the beginning of the year.

If this scheme is used the following questions should be asked.

What information should be included in the brochure?
How can this information best be presented?
When should the brochure be distributed?
How should the brochure be distributed?
How can the brochure be used to assist parents in the selection of a particular secondary school for their child?

2. An information night for parents and their primary children can be held:

(a) in the secondary school
  early in Year 6
  about the middle of Year 6
  during Year 5

(b) in the primary school
  early in Year 6
  about the middle of Year 6
  during Year 5

If this scheme is used, think about:

How many such nights should be held?
What information should be provided at the night?
How should the night be organised?
When should the night be held?
How can the night be used to assist parents in the selection of a particular secondary school for their child?

3. A day visit to the secondary school for primary children and their parents can be held:

during Year 5,
early in Year 6,
at Orientation Day in December of Year 6.

If this scheme is used, think about:

How many such day visits should be arranged?
How the day visit should be organised.
When the visit should be held.
Should the school be operating 'normally'?
How can the day visit be used to assist parents in the selection of a particular secondary school for their child?

4. Other means of providing parents with information about the secondary school:

(a) establish a school-community newspaper or magazine;
(b) prepare and make available
  a videotape of the school's activities,
  a mobile display of the school's activities;
(c) encourage greater contact between primary and secondary schools so that primary teachers may become informed sources of information about secondary schools (and secondary teachers may become more informed about primary schools).

If these methods are used, consider:

What should be included in a school-community newspaper/videotape/mobile display?
How should these sources be used?
How can greater contact between primary and secondary schools be encouraged?
How can these sources be used to assist parents in the selection of a particular secondary school for their child?

5. What else can schools do to assist parents in the selection of a secondary school for their child?

What Can Parents Do?

Parents need information about the various secondary school options available to their children, and detailed information about particular secondary schools they are seriously considering. They should:

attend all information sessions organised by primary and secondary schools and ask for any information not provided;
directly contact schools, in particular, secondary schools, and seek information about the schools;
directly contact the body responsible for the administration of the education system.

Perhaps the most basic question is not 'What can be done to encourage a greater matching between information parents seek and that which schools provide?', but rather 'Should most Australian parents have to make this decision at the end of Year 6?'.

Notes

Transfer from primary to secondary school was one aspect of the study *Transition in Education in the Frankston Region* by L.D. MacKay, J.R. Northfield, E.P. Atkinson, J.M. Atkinson, B.A. Fary, and R.F. Gunstone. It is in mimeo form in 2 volumes, and was published in 1979 by Monash University.

The writers of this article were the main researchers for this part of the study.

Item 2
(NZ)

set research information for teachers
number two 1980

Who Gets to Teach?

By Professor Peter Freyberg,
Waikato University

A look at some factors in the selection and training of primary teachers, with some suggestions for a radical change in approach.

Zodiac Sign

Date of birth was available for the 1975 intake to Christchurch Teachers' College. The retention rate of those born under different star signs was compared showing that Aquarius (86 percent), Capricorn (84 percent), Cancer (79 percent), and Aries (77 percent) had the highest proportions entering teaching from the three year course, while Libra (55 percent), Pisces (56 percent), Sagittarius (59 percent) and Leo (63 percent) had the lowest proportions. Comparisons of their ratings as year one teachers by principals showed that those born under Pisces, Gemini, Cancer, Virgo and Sagittarius had the lowest average ratings while Libra, Scorpio and Capricorn had the highest. Inspectors gave the highest ratings to Scorpio, Capricorn and Cancer and the lowest to Pisces. Thus, taking dropout rates and teacher performance into account, those born under Capricorn and possibly Scorpio are more likely to enter teaching and to receive high ratings as teachers than those born under Pisces.

– Research Paper – R. & S. Division, Department of Education

That paragraph comes in the middle of a very sober Department of Education Research Paper on the effectiveness of selection procedures undergone by every person who has applied to enter teacher training. It illustrates the findings: you might as well go by zodiac sign as by any other of the data obtained — age, qualifications, marital status, sex, years at secondary school, rating by secondary school principal, IQ, college attended, and so on.

Such negative results reported in 1979 are just the latest from a long series of attempts to find something, anything, which would predict future success in teaching. There has been so little success in this (largely statistical) endeavour that it can be fairly safely said that raising academic standards, raising ages, raising the number of personality qualities required, raising any qualification at all, would exclude as many good teachers as it excluded bad ones — that is, if the present teachers' college set up was otherwise unchanged.

Are there, however, ways of changing course content, subjects covered, length of courses, organisational procedures, social climates, and so on which would make students more involved, produce fewer failures, fewer drop-outs, and give us more and better teachers? Past research cannot provide any definitive answers to such questions but it can provide some clues. So I will focus instead on motivation, self-selection, and the lessons other systems of entry to teacher training can have for us.

Recruitment

Unfortunately there is very little real information about recruitment. However, a recently completed piece of research by Peter Ramsay on the vocational commitment of teachers and nurses overlaps with research of my own, and the findings are almost exactly parallel.

Three particular myths are discredited by Ramsay's findings: first, that the majority of students entering college are committed to a career in teaching; second that those who complete the training programme become more committed as the result of this experience; and, third that those who fail to complete the course do so because of lack of commitment.

My own research, like the more recent Departmemt of Education study, showed how ineffective selection criteria are in predicting both success in college and success in first-year teaching. Ramsay's evidence seems to lead to similar conclusions: in attempting to select students before they enter college, neither academic nor personality factors, nor professed commitment at an interview, are very useful criteria once certain minimums (e.g., academic qualifications) have been reached.

In my study, more than half of the students who failed to complete their training left during or at the end of the first year. Ramsay also found that most of his voluntary leavers (i.e., those not forced out by lack of academic success) departed by the end of the first year. It seems therefore, that a substantial self-selection of various kinds takes place during this period, and this should be encouraged.

Also, selection is a two-way process — students have to opt in to the training programme as well as being allowed to enter it. If selection were to be made at, say, the end of the first year in college, then those students who chose not to enter at that point should be able to credit the work they have successfully completed towards some other qualification without too much loss of time. This would require that the first year course be fairly general — as it is at present at Hamilton Teachers' College — but with some experiential elements built in to enable both students and staff to assess the student's professional potential and likelihood of job satisfaction.

This leads to the conclusion that, whatever minimum entry qualification is required, there should be relatively open access to the first year of training. The larger the first year pool the better the chances of selecting on the basis of their performance those students who, as my study showed, will do well both in their training programme and as classroom teachers. There would be considerable student salary/bursary implications in such a move, it is true, but if all first-year students were placed on the Tertiary Study Grant rather than salary, with no bonding commitment, the salary savings would probably more than support the extra college staff required for an open entry system with U.E. or equivalent as the minimum entry standard. If first-year requirements could also be obtained by part-time study an additional avenue of recruitment of older students (the most successful group identified in this study) would become available.

Ramsay also has evidence that some highly-committed students, predominantly from lower socio-economic and/or Maori backgrounds, were forced out by their poor first-year performance and/or their failure to adjust to an unfamiliar large formal organisation. In a university or technical institute such students could continue, and take an extra year to complete their qualifications, sometimes doing so at high levels once they have overcome some initial handicaps. In a teachers' college, because there is no provision for self-supported students or those taking more than the minimum training period, such persons cannot do so and are lost to the profession.

Tinkering round with selection procedures before training begins will, on the evidence of considerable research in vocational guidance, achieve only marginal gains: the criteria themselves are poorly-correlated with subsequent performance. For example, my research showed that of those who had UE or better and chose not to attempt university courses, 36% failed to complete their training compared with 16% of those who undertook university work. Willingness to take on university study is probably a motivational indicator. However, if it became known that this could be a factor in student selection, almost all qualified applicants would say they were going to undertake such study! Ramsay found, in his study, that those who expressed themselves as committed to teaching as a vocation did significantly better (statistically); but such a question at the entry interview would be very open to faking.

To sum up, then, an increasing body of research confirms what many people have suspected: that our present selection procedures are demonstrably inefficient but cannot easily be improved with the present age-group and selection point. The greater the demand for teachers' college places, the larger the absolute number of potentially-successful applicants who will not be selected. As long as the present inflexible lengths of time to complete the various training programmes remain, we will continue to reject some students, particularly from minority sub-cultures, who could make a real contribution to the profession if given extra time and assistance to raise their own academic performance.

And a major reason why these conditions persist, is the payment of high student allowances to those fortunate enough — or personable enough — to impress a selection committee. These allowances force early selection on the system.

Training

It is not easy to document the effects of the present selection and payment system on what goes on within the training programme. However, there is some evidence in Ramsay's research to confirm the view that a substantial number of students see a well-paid college period as (a) a way of getting early financial independence while taking time to sort out one's ideas on the future; (b) a financially comfortable way of filling in time until marriage or an overseas trip; (c) a way of remaining a student; or (d) a way of obtaining a fall-back professional training (and possibly a degree) with minimal financial problems. These motivations are not reprehensible in themselves, and it is impossible to say what proportion of students they apply to. Nevertheless, such students must be viewed as an economic trading-loss to the teaching profession as a whole. Teachers in their classrooms are largely responsible for what happens, in the name of education, to their classes of 30 or so pupils. Syllabuses, departmental directives, and school policies provide no more than a framework for their decisions. Unless they have learnt *through experience* the difficulties and rewards of thinking through courses of action for themselves, they will inevitably fall back on the kind of half-understood plodding use of teaching materials devised by others — a procedure which, more often than not, successfully 'turns pupils off'. (In my view this is the biggest single challenge that the education system faces at the present time.)

Where students are 'employed' to learn, as they are at present, undesirable attitudes in both lecturers and students often result. The system encourages a 'bosses/workers' climate where lecturers demand work and students resent instructions; it encourages lecturers to tell the students what to do rather than to give them the sort of responsibilities which encourage responsible attitudes; it gives rise to an excessive amount of institutional time being given to checking up on how the public investment of money is being spent and usually this means how much time is being spent rather than what results are being achieved. Ramsay found in his study that this led to attitudes of 'fulfilling college requirements' rather than of deliberately seeking to acquire the knowledge and skills needed to be a teacher. Moreover, the system tends to diminish the students' feelings of having to put something themselves into their professional development. And — whether we like it or not — people generally become more committed to an enterprise into which they have sunk some material, as well as emotional, capital.

Teachers' colleges in this country are justly proud of their caring attitude towards their students, compared with universities, for instance. My contention is that they have been over-protective and that, in the long run, this is neither in the students' best interests, nor just as importantly, those of the children they will teach. Conditions in teaching, as the result of both social and curricular change, are becoming more demanding year by year. Our present policies encourage the retention in college of students whose hearts are not in what they are doing, or who feel themselves inadequately prepared in the time available. The policies which encourage this situation are (1) the restricted intake to colleges; (2) the fixed length of the teachers' college courses; (3) the understandable desire to protect the substantial financial (salary) investment in each student, through such devices as bonding; and (4) lack of portability of qualifications to other tertiary institutions.

What these points seem to lead to is a further argument for (1) unrestricted entry; (2) progressive selection (largely self-selection as the demands of training make themselves felt), and (3) admission to the profession on the basis of demonstrated competence rather than on having survived a fixed period of course work and a fixed number of teaching sections. But the payment of bonded allowances and the fact that it is not possible to enrol in a teachers' college for anything but a full-time fixed-programme course, make these changes impossible.

Pattern of Service

All of the foregoing arguments need now to be considered alongside the fact that a substantial portion of the resources put into initial teacher training in this country is at present wasted. This is not because the training itself is inefficient (except in the ways noted earlier), but because so many of those trained do little actual teaching. It is rare for physicians, male or female, or lawyers or accountants to stop practising; they provide both a personal and national harvest for 35 years or so.

In the case of teachers, the picture is very different. Only about two thirds of men primary teachers and less than one quarter of women primary teachers still remain *in any branch* of education 12 years after completing their training. Of course a substantial number of women (about 30%) return after raising a family, but this means that more than half of any group leaving college give less than five years total service: in fact the mean length of service for women primary-trained teachers is probably about only 9 years (5.32 years of continuous service over the whole of a cohort; 4.29 + 12.15 = 16.44 years of broken service for the 30% who return to teaching).

Again I would not minimize this contribution to the general pool of educated persons in the community, nor its indirect effects on the playcentre movement, for example. But it is a very expensive (and privileged) form of general education if the community is *paying* selected people to get it. Less than half of our student teachers will continue in the profession for more than a very limited period. Should we not, instead, put our national investment into those teachers who do remain, or have returned to the profession, rather than indiscriminately into the whole group?

Teachers need to be brought up-to-date with content and methodology regularly. There is also research evidence that experienced teachers benefit to a greater extent than student teachers from some kinds of courses in curriculum particularly those which draw on their experience. In other words, there is a case, on both educational and economic grounds, for redistributing some of the current resources from the initial training to the further education of teachers. Any lesser initial period than 3-4 years would not provide a satisfactory initial training. Any redistribution, then, would have to come from a reduction in cost of that training.

The Minister of Education recently announced a new scheme for trainee teacher allowances which will bond students for almost the full amount of the allowances paid to them instead of the nominal amount of $600 as at present. This will lead to a bond for at least $7000 for a primary teacher. Not only is it immoral, in my view, to impose this on 16-18 year olds as a condition of training but previous research completed in 1970 when the bond was more realistically related to allowances received, indicates that those students who can afford it will opt for the inadequate Tertiary Study Grant (without bonding). Others will be excluded from the profession on economic grounds, until a more realistic grant is available for all tertiary students.

The Cost of Training

It costs relatively more to train a teacher than a practitioner of almost any other profession in the country. If we take the academic year 1976 and the financial year 1976-77 as an example, the average cost per student training in a teachers' college was approximately $5,200. Of this by far the greatest proportion went to paying the student allowance/salary (mean $3,619).

Money for teacher training should not be skimped: the strength of any education system lies in the abilities of its teachers, developed through their professional education. But is the profession and the community getting the best value for money spent?

The main arguments put forward for payment of a substantial premium to student teachers over and above the Tertiary Study Grant, have been:

(a) that full financial support during training is necessary to attract people into the profession and guarantee sufficient numbers of new teachers year by year;

(b) that it is desirable for students to become fully committed to the profession from the start of their training, and that this can be achieved by paying them in the same way as apprentices or cadets are paid;

(c) that it is necessary to pay students to permit those from minority and lower socioeconomic groups to train as teachers, thus securing a better-balanced teaching force; and

(d) that extra clothing and personal equipment is required for teaching practice and that the longer academic year actually reduces the possibility of additional earnings.

The situation in overseas countries with which we have the greatest comparability — Britain, Canada, the United States, in particular — demonstrates that teaching is a sufficiently attractive occupation in itself, as a rule, to lead to a continually sufficient flow of students to teachers' colleges. Where this has not occurred (for example, in the immediate post-war years) it has largely been the result of baby booms and of competition from other professions with higher potential financial and social status, rather than lack of sufficient allowances for students. It is the rewards of the *practitioner*, not of the *trainee*, which is the prime concern to most prospective entrants.

Second, paying an allowance, at about apprentice level, as we do now, does not do anything towards committing a student teacher further to his profession. The survey of the 1964 college Division A output showed that approximately 31% of men and 57% of women had left the profession within, or in the two years immediately following, the period of bonding. Certainly some of these would have returned to the profession later, especially the women, but these figures (and the others cited) do not support the proposition that pay during training has ensured commitment to the profession. In fact, I think it shows the opposite: that a substantial group of students aim to leave the profession as soon as they can do so without financial penalty. Of the 444 men from the 1964 output, for instance, 49 left the profession during their bonded period and a further 100 during the following two years. The attitudes in young teachers that this situation breeds is highly undesirable, to say the least. Furthermore, the turnover in teachers which ensues, results in the majority of New Zealand children being taught by relatively inexperienced teachers.

That leaves the social argument. Teaching has for a long time been a socially diverse occupation, although not as much as might be desirable for ethnic minorities. It has encouraged social mobility because entry cost relatively little to the prospective teacher's family, either directly or in the foregone earnings. It has also been possible for adults with family responsibilities to undertake training — I was one such, myself. However, it is not necessary to pay all students; it is only necessary to provide supplements for those who need them. The provision of higher-paid studentships for particular categories of students, and fully-bonded supplements for mature students, as proposed in the new studentship scheme, should safeguard a desirable degree of social diversity in the teaching profession.

If the majority of teacher trainees could be persuaded (or required) to accept the unbonded Tertiary Study Grant rather than the bonded college studentship there would be considerable financial savings. These could be used to:

(a) increase the general level of the Tertiary Study Grant for all tertiary students;
(b) provide the supplements for specific groups of students, referred to above;
(c) and, most significantly, to increase the further education opportunities for teachers who remain in the profession.

Furthermore, allowing teacher training courses to be taken on a part-time basis (apart from teaching practice periods) would serve a triple purpose. Not only would it cut the costs of training, since part-time students would presumably study free but not receive allowances, but it would also remove the pressure to pass students who are weak in particular areas simply because there is no provision for them to be taught beyond the fixed period. It would also encourage into the profession married women whose children are still home so that they do not wish to study full-time — but who wish to prepare themselves for a professional career in two or three years time: research shows that this is a high-performing, high-retention group, although their relative immobility in subsequent years could cause problems.

An Alternate Approach

The broad features of the landscape into which the argument has led us should by now be reasonably clear. It is in some ways radically different from the present one, yet not so different that it would be impossible to adapt quickly to, administratively and practically.

The steps which seem to me to be necessary are as follows:

1. Place most full-time teachers' college students on an improved Tertiary Study Grant for the full 52 week year.
2. Provide a limited number of scholarships for special groups, on the basis of financial need.
3. Provide fully-bonded supplements for a limited number of adult entrants, graded according to family responsibilities. (This has recently been accepted by the Minister.)
4. Remove the quota on entry to teachers' colleges, but institute a selection at the end of Year 2 if necessary.
5. Through the Standing Committee on Relationships in Tertiary Education (SCORITE) seek a liberalization of cross-credits from teachers' college to technical institutes and universities after 2 years for those electing not, or not selected, to complete professional training.
6. Permit part-time study for teachers' college diplomas, with some form of fees bursary, and allow some repeating of courses rather than outright failure.
7. Offer fully-bonded leave with pay to a generous number of certified teachers, to enable them to take specialist or advanced training at either a teachers' college or a university.
8. Provide for free retrospective credit in the Government Superannuation Fund of the full training period on the completion of five years service.

A further step which might be desirable is:

9. The raising of the minimum age for entry to a teachers' college to 18 years, thus drawing on a more mature age group.

While these steps might seem revolutionary to teacher organizations in particular, they are simply a combination of the conditions which already apply in Britain and the United States and most states in Australia where there is (a) no general shortage of teachers and (b) no reason to believe that teachers are, overall, less well trained than in New Zealand. In fact, in specialist and further education facilities for teachers, both these countries leave us behind for the very reason that they distribute their resources more in those directions. Additional suggestions to assist with the induction and retention of teachers are given in a paper presented by Dr Ramsay at a conference of the South Pacific Association for Teacher Education.

Concluding

I have made out a case for some radical changes in our system of teacher education, designed to overcome some of its present disabilities. That changes are necessary, particularly to secure more open-ness and flexibility of initial training programmes is well recognised and the subject of endless talk by teachers' college staff and students. There is no single 'best' way of training teachers and we ought to recognise this by designing a system which deliberately provides for many alternative paths to entering the profession.

Notes

The Department of Education research paper on the effectiveness of selection procedures for teachers' college entry was prepared by Helen Norman and is called *Teacher Selection Study: Relationships Between Pre-selection Data, College Progress and Teaching Performance.* It is available in mimeograph form from the Department.

The major part of this item was culled from a paper originally given to the Ministerial Conference on Teacher Training, 1978 called *The Case for a Radical Change of Approach to Teacher Education* and from the report No. 2 of the *Teacher Education Research Project*, Hamilton, University of Waikato, 1977.

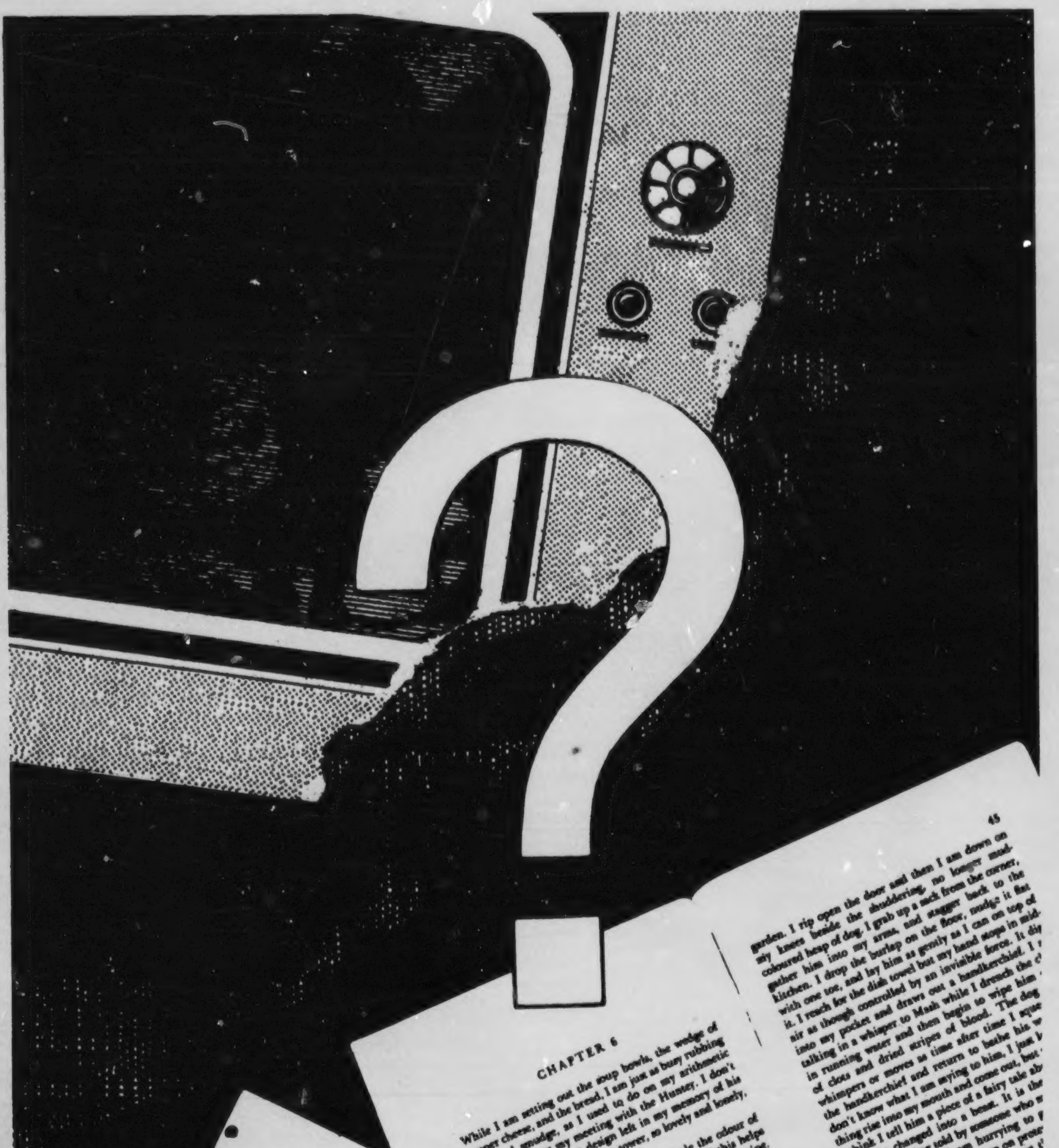
An earlier study by Professor Freyberg was 'An investigation of Student Teacher Attitudes to Bonding and Allowances' in *The New Zealand Journal of Educational Studies*, Volume 5, 1970.

Peter Ramsay's research is to be found in his Ph.D thesis, *The Development of Vocational Commitment in Student Teachers and Nurses* for Waikato University, 1978. There is also a very interesting article called 'Why Teach?' in the *New Zealand Journal of Educational Studies*, Vol. 14, No. 1, 1979, and further points in his paper presented to the South Pacific Association for Teacher Education Conference at Sydney in August, 1979.

Item 3
(A)

TV and School Achievement?
A Real Poser

set research information for teachers
number two 1980


45
CHAPTER 6
1
1. The first house he saw was painted blue.
2. The church was five miles away.
3. His grandfather had six children.
4. The kitchen chicken was cold
6. No-one wanted
16

Sue Price

TV and School Achievement?

A Real Poser

By Kevin Sharman
ACER

The Situation

There is no doubt about the attraction that television has for children; it is their main leisure time activity and is recognised together with the home, school and peer group as a major socializing and educative influence on their lives. How and why children use television, and the impact it has upon them, are certainly questions of concern for the community and have caused much debate.

Parents and teachers in particular are concerned about the content and quality of the programmes viewed by children particularly when the values and behaviour appear counter to those of the home and school. Television has been blamed for all sorts of maladies and anti-social effects; decline in family life, poor school achievement, deterioration of eyesight, debasement of values and taste and the encouragement of passivity, delinquency and juvenile crime and violence. On the other hand, there are those who see in television great potential for the stimulation of children's imagination, curiosity and understanding of the world about them by bringing to them, in their homes, realistic visual experiences not able to be obtained from other media.

Governments too have shown interest in children's relationship to television and its impact upon them. The United States Surgeon General's Inquiry in 1972 into the impact of televised violence on children and the Canadian Royal Commission into Violence in the Communications Industry in 1977 are two notable overseas examples and in Australia, a Senate Standing Committee has recently published a report of its inquiry into the impact of television on the development and learning behaviour of children. The reports of the Australian Broadcasting Tribunal and its predecessor the Australian Broadcasting Control Board make frequent comment on the quality of children's television programmes. The relationship of children to television was a major issue in the Tribunal's recent inquiry into self-regulation for broadcasters and the licence renewal hearings, with many of the submissions dealing with this issue. Action has also occurred on standards of children's television in Australia. The Australian Broadcasting Tribunal has laid down stringent regulations regarding children's programming in the late afternoon time slot and established in November 1978 the Children's Programme Committee. This committee has the responsibility of drawing up guidelines for children's television and designating programmes as being specifically designed for children (as distinguished from those suitable for viewing by children) and, therefore, able to be shown in the time reserved for children's programmes.

The relationship of children to television has certainly been a major research interest to psychologists and sociologists over the years with the result that a good deal is now known about its influence. Unfortunately, the popular debate about the whole gambit of possible effects of television, including the effect on children's school achievement, has been conducted at a very emotive level, with the research data often selectively used to support one side or the other without any attempt to put the results of the particular research studies into perspective. Concern over this point led the Senate Standing Committee to insert a reproof in its report and to call for a high priority for research into the alleged harmful effects of television on the learning behaviour of Australian children. Certainly well founded research into this area is needed, not only to clarify the issues, but also so that policy decisions regarding children and television can have legitimate foundation. What does the research evidence to date tell us about the impact of television viewing in the home on school performance?

TV and School Performance

One lesson that the research evidence makes clear is that in assessing the impact that television may have on school performance it is most important to place watching television in the context of the other media and the other institutions, such as the family, school and peer group, which themselves impinge upon media use and also impact upon all the facets of the behaviour of children — including how well they perform at school. It must be remembered that television viewing does not occur in isolation. Children come to watch, exhibiting individual differences in personal characterisitics and past experiences, they seek different gratifications from television viewing, view different sorts of programs, view in differing environments and display a variety of outcomes as a result.

Research shows us that the great majority of children seem to enjoy television but some utilize it more than others. Children who are more intelligent, who come from higher socio-economic status homes, from homes where parental control of viewing is greater, and who have good relationships with parents and peers tend to be the moderate viewers while those children with emotional problems who are less intelligent and who do not interact well with parents or other children seem to view much more television, many viewing in excess of 40 hours per week and at times usually reserved for adult programmes.

An important implication for the potential effect of television viewing on school achievement is that generally children do not seek television for the educative or informational function which it might perform but primarily for the entertainment that it provides. While children might say that watching television provides information and helps them with their school work, most children tend to shy away from programmes which are primarily informational or educationally orientated. What they learn from television is, thus, largely incidental to the main function that television fulfils and, therefore, may have little direct relationship to the school curriculum.

The relationship between the differing characteristics of children, their television viewing behaviour, and school achievement is indeed one of great complexity. For example, television viewing behaviour can be seen to consist of the hours viewed; the time of viewing and the programmes and channels chosen; the degree and nature of the parental control exercised; whether the viewing occurred alone or in company, and if in company with whom; the interactions which might have occurred while viewing, including the extent to which the outcomes of viewing might be moderated by such interactions; the other activities which may have been engaged in while viewing; the activities which may have been foregone. Research has shown that television viewing is often not an activity undertaken to the exclusion of other activities. Most viewing is done in the company of others and a variety of activities occur during the time the television set is on. Children converse, eat, read, study and play games, some of which may require some absence from the viewing room. Moreover the activities which tend to be displaced by television are those which fulfil similar functions to television, for example, listening to the radio, reading comics, 'mucking about' with friends, or doing nothing in particular. Reading books apparently suffers less than other media related pastimes when television is introduced and there would appear to be little effect on school related activities such as homework. Acceptance of this displacement theory has important implications for the proposition that school performance would improve if television viewing was curtailed. It may very well be that time freed by less viewing would not be devoted to activities more directly beneficial to school achievement if these activities were freely chosen by children.

Research seems to suggest that television viewing has a differential and interactive effect which depends upon the particular programmes viewed and the aspects of school achievement being measured. Children who seek out programmes on nature, science and current affairs might be expected to perform better in related aspects of school work than children who prefer programmes less related. In addition, the relationship between television viewing and school achievement is probably two-way in nature. Not only might television viewing affect school performance but poor performance at school, because of the psychological stresses that this would create could cause heavier viewing. Moreover the relationship is further complicated by the possibility that excessive viewing may in fact be a symptom of psychological disturbance (anxiety, frustration, aggression, conflict, low self-esteem and other unsatisfactory human relationships) which might also be the major underlying cause of poor performance rather than the hours spent in front of a television set. Certainly, research supports the proposition that the heavy viewers of television, particularly of fantasy oriented programs, are also those children who do less well at school. But this is not to say that there is a causal link in this relationship for as pointed out above, heavy viewers are also children who have unsatisfactory relationships with parents and peers, who are less intelligent, who come from lower socio-economic status homes, and who experience less parental control of their viewing. It may very well be that the link which explains the poor school performance of heavy viewers of television is to be found in these other factors.

It is important also to distinguish between the immediate or short term effects of television viewing and the cumulative or long term effects and to distinguish between the effects on children of the content of the programmes watched and the potential effects of the act of viewing itself, independent of the content of the programmes. An interesting number of studies, including an important contribution in Australia have suggested that the main danger of television may not be in the content but the character of the medium itself. From examination of the neurological functioning of the brain it has been suggested that the act of watching television induces passivity or mental torpor, stunting the imagination and reducing attentiveness. Such an impact of television would, it is suggested, have an effect on the basic underlying general ability of children and indeed in the USA some blame has been attached to television viewing for the noted decline in the scholastic aptitude test scores used for college entrance examinations. While there prevails some controversy over the validity of these conclusions, if they were to be substantiated, then certainly it would help explain the poor creativity, lethargy and lack of concentration that many teachers complain about in their pupils particularly those known to be heavy viewers of television.

An Australian Survey

The complexity of the relationships in this area and the need to be guarded in drawing conclusions from simple associations can be illustrated from the results of a recent survey of the television viewing behaviour and school performance of Melbourne Grade 6 children in state primary schools. In this study of 271 children significant simple negative correlations were found between time spent watching television and (a) school performance measured as overall school achievement and (b) achievement on a test of comprehension in social studies. Therefore, one might be tempted to conclude that television viewing impairs school performance. However, when other variables known to affect school performance were taken into account, principally intelligence, self esteem and association with peers, it was found that the negative association disappeared and a positive relationship was generated between comprehension in social studies and watching television. Consequently this study was able to show that the children who performed less well at school were also the highest consumers of television. But these children were also less intelligent, and it was this factor which contributed to their poor overall performance at school rather than watching television. Moreover, the study showed that performance on a test of comprehension in social studies may have been enhanced by television watching over and above what might have been predicted from the child's basic ability, self esteem and how well the child got on with other children. It would seem that maybe television has the potential for improving some aspects of school achievement. Using a statistical technique the study was able to analyse the associations between certain personal characteristics of children and aspects of their viewing behaviour taken collectively.

Boys who come from lower socio-economic status homes and who experienced less parental control viewed more sports, cartoons, quiz and audience participation programmes and fewer children's educational programmes. The heavy viewers of television tended to view indiscriminately and to be children of lower IQ, from lower status homes where parental control of viewing was less and to be girls. Children of lower ability, from lower status homes and experiencing less parental control preferred to watch the commercial channels and shied away from the Australian Broadcasting Commission station.

Those children who watched more alone and before school tended to be boys who were less intelligent, from lower status homes and were experiencing less parental control of their viewing habits.

Implications

What then are some implications of this research evidence on the relationship between television and school achievement? While it is clear that children generally will spend more time in the company of the TV set than with their teachers in the classroom, this research study does not point to any substantial effect of this activity on their school performance. The major influence on children's school achievement remains their basic ability modified by the characteristics, attitudes, practices and processes of the home, school and peer group. The influence of television alongside these factors is likely to be small and while one can point to heavy viewing of television and poor school performance being found together there can be no conclusion from this fact that one causes the other. The coexistence of these characteristics is the result of a complexity of inter-related factors which impinge upon television viewing behaviour and school achievement. Of course, children who view large amounts of television should be treated with concern, but is probable that heavy viewing is the manifestation of some underlying emotional problem which needs identification and remedy. Such may be the cause of poor school achievement, rather than the viewing of television.

The complexity of relationships involving television certainly needs to be more analysed and understood and in doing this it may well be found that notwithstanding the minimal overall effect, there are detrimental effects of television on some aspects of school achievement and beneficial effects on other aspects. Television may not be the big ogre that it is sometimes painted. What is certainly true is that television will not go away. It is a fact of life for children, it utilizes the major part of their leisure time and is sought by children mainly for the entertainment that it provides. Herein lies the challenge for parents, teachers and those in the television industry to ensure that this activity is as rewarding for children as it possibly can be. For parents it means involvement with their children in the viewing of television; for teachers, it means utilization of this vast amount of shared experience in their classrooms; and for the industry it means the production and selection of programmes which provide quality entertainment for children.

Notes

The United States report on television violence can be found in Surgeon General's Scientific Advisory Committee on Television and Social Behaviour, **Television and Growing Up: The Impact of Televised Violence** Washington, U.S. Government Printing Office, 1972.

The Canadian report is: Royal Commission on Violence in the Communications Industry, **Report** Ontario, Queen's Printer, 1977.

Australian reports are: Senate Standing Committee on Education and the Arts, **Children and Television,** Canberra, Australia Government Printing Service, 1978. Australian Broadcasting Commission, **The Small Child Audiences: Radio and Television Compared,** ABC Research Survey, 1973.

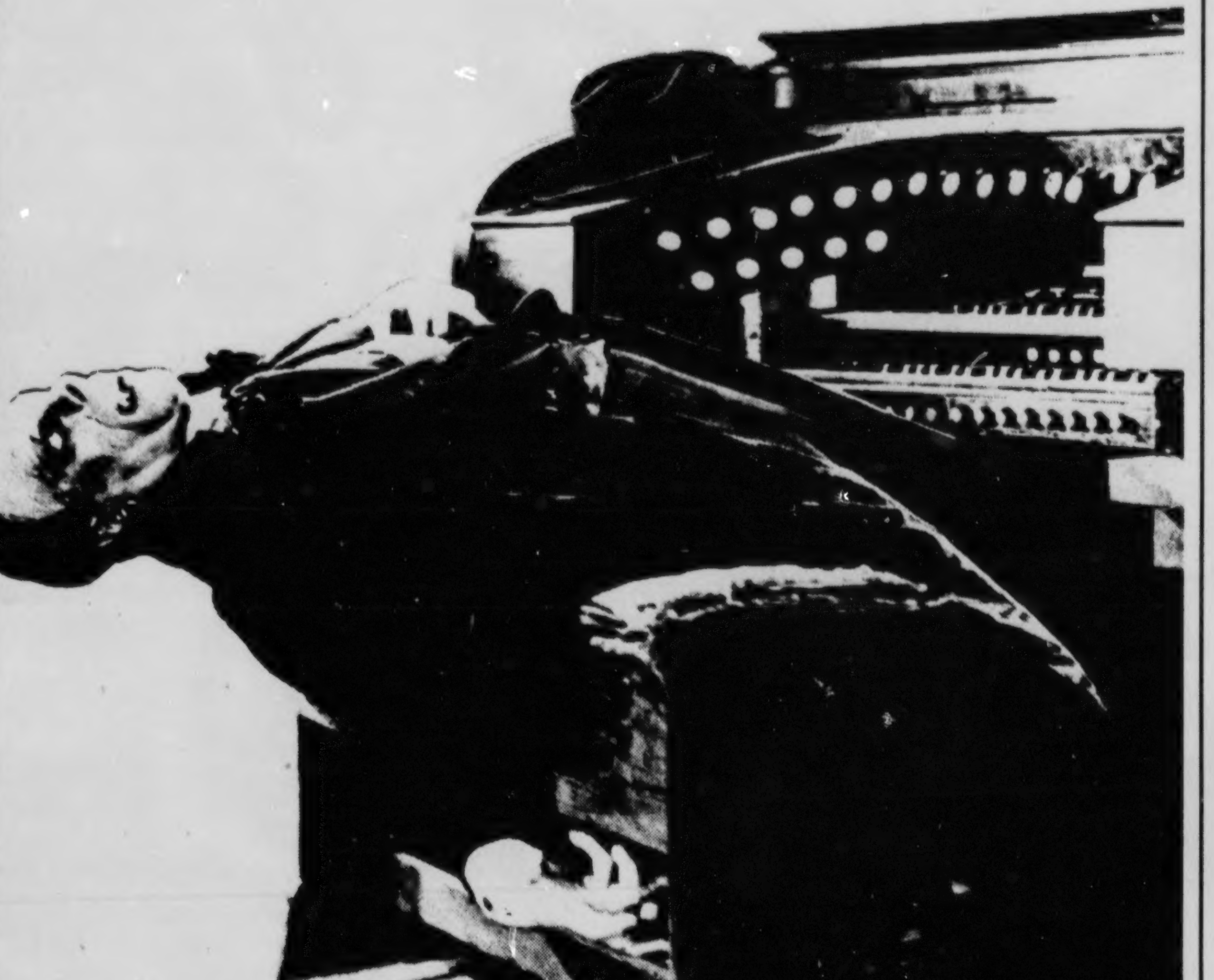
A discussion of the dangers that may lie in the character of the medium can be found in: Emery, F.E. and Emery, M. **A Choice of Futures: To Enlighten or Inform?** Canberra, Australian National University Centre for Continuing Education, 1975.

The recent research survey in Melbourne was carried out by the author and can be found written up in: Sharman, Kevin. **Children's Television Behaviour,** Melbourne, ACER, 1979.

Item 3
(NZ)

set research information for teachers
number two 1980

Onside with Online



Onside with Online

By Keith Pickens
NZCER

It is a cliche to talk about 'the information explosion' but it is a fact, nonetheless, that in the last 30 years or so new knowledge has been accumulating at a faster and faster rate. It took 32 years (1907-1938) for *Chemical Abstracts* to publish its first one million citations. The second million took 19 years, the third 8 years, the fourth just under 5 years and the fifth a little over 3 years.

The greatest growth has occurred in the pure and applied sciences that underpin our modern technological society but the volume of social science information, including information about education, has grown rapidly too.

The U.S. *Educational Resources Information Center* (ERIC) data base for example, begun only in 1966, contains over 360,000 records. There are over 700,000 in *Social Scisearch* (1974-1980) and *Psychological Abstracts* (1967-1980) contains close to 300,000. In each case new documents are being added at a steadily increasing rate.

And it is not only the volume of overseas information that has increased. The *New Zealand Journal of Educational Studies* began in 1966, *Delta* in 1968 and *set* itself in 1974. Each added between 20 to 30 new items *annually* to the pool of New Zealand documents. Then there are special interest publications, like *New Zealand Language Teacher* (1974), *PACE* (1975), *Mental Handicap in New Zealand* (1976), and *Technical Education* (1977).

Nor can we overlook the fact that between the mid-1960s and mid-1970s the size of the departments of education in the universities of New Zealand doubled, or that, in 1979, the very newly established *New Zealand Association for Research in Education* held its first national conference, producing in the process over 70 papers or contributions.

Because the New Zealand documentation on education and on research in education is not under bibliographic control it is impossible to say by what percentage these and other developments have increased the volume of New Zealand information, but no one doubts that in the last 10 years and particularly in the last 5 years a significant increase has occurred.

Coping with the Flood

The sheer volume of information pouring out of high speed printing presses and the multiplying number of photocopying machines has all but swamped libraries, let alone the readers for whom it is intended. Nowadays it is a rare library that can afford to buy all the books and journals in its field, let alone track down all the relevant photocopied documents. But even if a researcher could find time to locate copies of all the books, articles and reports relating to her topic the time she has available to read an ever increasing number of studies remains the same or, if it increases, it does so only at the expense of the time spent on research.

It is very much a Mr Micawber situation: one hour a day for reading and one article a day for reading equals bliss: one hour a day for reading and 10 or 20 articles a day for reading equals panic and confusion. The difficulties are worse, of course, if you are a teacher with only a few hours a week to do your professional reading and without direct access to an education library or some kind of information system or service.

There are no simple answers to any of these difficulties but at least one aspect of the problem created by the information explosion has been more or less solved by the use to computer technology. It is now possible to search, in a few minutes, very large computer-held data bases and identify articles or reports that deal substantially with the topic of your interest. Having located the references you need you can then have printed all the details you require, including abstracts if available. You still have to obtain copies of these documents, of course, and you still have to find time to study and assimilate what they have to say, but the time taken to locate your reading has been cut from hours to minutes, you get a much more comprehensive coverage, and the whole process is almost effortless. Computer searching of information data bases has been available in the United States for a number of years. It became available in Australia in 1976 and was introduced into New Zealand in the last few months of 1979. This is how it works.

The Terminal is Connected to the Telephone

You need a computer terminal. This can be a small and very portable typewriter-like device or the rather more traditional video display unit (VDU). In the latter case you will almost certainly have the VDU coupled to a line printer, so that you can record the details of your search as it goes on. Whatever the arrangement, it has to be plugged in to the telephone system, and to do this you use a device called a modem. In plain language, the modem converts the electrical signals from your terminal into audible signals which the telephone can 'hear' and transmit. At the other end the signals are reconverted by another modem, and fed into the host computer. It is all rather technical, but then we live in a technical world.

The Telephone Connects You to OASIS

OASIS stands for Overseas Access Service for Information Systems, a telecommunication facility operated by the New Zealand Post Office. OASIS can handle up to 16 concurrent users, so it is something like the old-fashioned party line. The difference is that everyone can more or less talk at once without anyone's message getting lost or confused. The other interesting thing about OASIS is that it transmits via satellite, routing the signals from your terminal across the Pacific into Tymnet.

OASIS Connects You to Tymnet

Tymnet is a U.S. telecommunication network linking U.S. computers and data bases. It is really a telephone system for computers, transmitting not words but data signals from terminals to computers and vice versa. There are two such networks in the U.S., the other being known as Telenet.

Tymnet Connects You to DIALOG or ORBIT

DIALOG is an information retrieval system operated by the Lockheed Missiles and Space Company, Palo Alto, California. It is one of two U.S. information retrieval systems available via OASIS, the other system being ORBIT, operated by the System Development Corporation, Santa Monica, California.

Both are on-line, interactive systems. This means that you communicate directly with the computer (on-line) and that it is able to respond (interact) to your commands as they are issued. Thus, having begun a search, you can decide, on the basis of the response received, whether to continue the search and, if you do, how to refine or re-define your query, to give a better return. Once you have obtained the information you want you can tell the computer how you want this printed for later study.

What's In DIALOG For Me?

In 1972 Lockheed had one file available for searching. Now there are over 100, and they cover all manner of topics: Pollution *(Pollution Abstracts)*, Energy *(Energyline)*, Agriculture *(Agricola)*, Philanthropy *(Foundation Directory)*, History *(Historical Abstracts)*, Current Affairs *(Newsearch)*, Demography *(Population Bibliography)* and even Philosophy *(Philosopher's Index)*. Nine of the files (detailed below) are of direct interest to educationalists. In addition, there are a number of others; for example, *Conference Papers Index*, which might be worth consulting on an occasional basis.

Nine Lockheed Data Bases

Child Abuse and Neglect, 1965-present, 8,800 citations.

Child Abuse and Neglect contains about 4,500 records of three sorts: ongoing research project descriptions, bibliographic references, and service program listings. Each of the three subfiles deals with material of interest to social workers, family planners, sociologists, educators, criminologists, and legal researchers studying in the field of child abuse and neglect. *Child Abuse and Neglect* includes English-language material only and cites only research projects and service programmes in the U.S. Documents covered in the bibliographic file include books, periodical literature, government and research reports, and conference proceedings. $35 per online connect hour, 10c per full record printed offline.

Comprehensive Dissertation Abstracts, 1861-present, 648,000 citations.

Comprehensive Dissertion Abstracts is a definitive subject, title, and author guide to virtually every American dissertation accepted at an accredited institution since 1861, when academic doctoral degrees were first granted in the United States. In addition, CDA serves to disseminate citations for thousands of Canadian dissertations and an increasing number of papers accepted in institutions abroad. Professional (e.g., M.D., L.L.D.) and honorary degrees are not included. All subject areas are covered. $55 per online connect hour, 12c per full record printed offline.

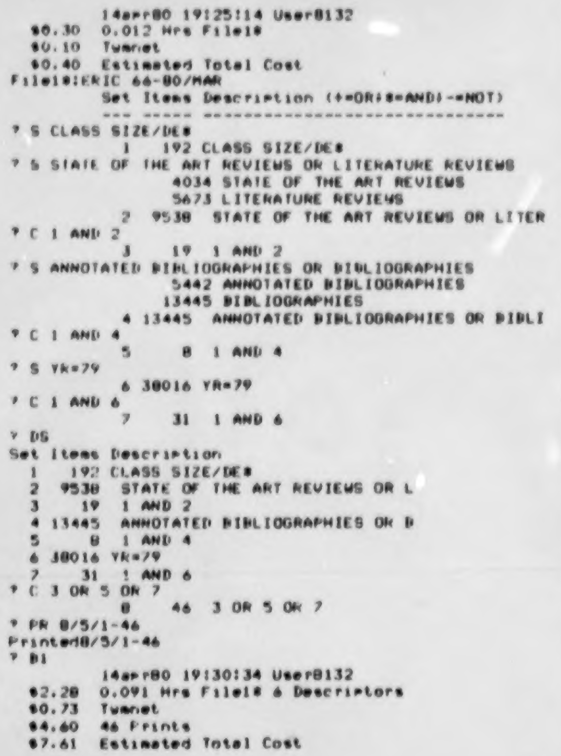


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Figure 1

ERIC, 1966-present, 360,000 citations.

ERIC is the complete data base on educational materials from the *Educational Resources Information Center*. It consists of two main files: *Research in Education*, which is concerned with identifying the most significant and timely education research reports and projects; and *Current Index to Journals in Education* an index of more than 700 publications of interest to every segment of the educational profession. $25 per online connect hour, 10c per full record printed offline.

Exceptional Child Education Resources, 1966-present, 38,000 citations.

Exceptional Child Education Resources (ECER) is a comprehensive data base concerned with published and unpublished literature on the education of handicapped and gifted children. More than 23,000 citations are included in the ECER data base, covering such sources as books, journal articles, teaching materials, and reports. ECER is a valuable supplement to the *Educational Resources Information Centre* data base (ERIC) since only about one-quarter of the ECER citations are duplicated in ERIC. All aspects of the education of handicapped and gifted children are included. $25 per online connect hour, 10c per full record printed offline.

Language and Language Behaviour Abstracts, 1973-present, 33,000 records.

Language and Language Behaviour Abstracts (LLBA) provides current selective access to the world's literature on language and language behaviour as a service to all researchers and practitioners in disciplines concerned with the nature and use of language. Articles abstracted in LLBA are drawn from approximately 1000 domestic and foreign journals. $55 per connect hour, 15c per full record printed offline.

NICEM, 1979 edition, 326,500 records.

The *NICEM* data base offers comprehensive coverage of non-print educational material. NICEM covers the entire spectrum of the educational field from pre-school to professional and graduate school levels. Librarians, media specialists, curriculum planners, and researchers who search NICEM will gain references to all types of educational media — 16 mm films, 35 mm filmstrips, overhead transparencies, audio tapes, video tapes, phonograph records, motion picture cartridges and slides. $70 per online connect hour, 20c per full record printed offline.

Psychological Abstracts, 1967-present, 305,500 citations.

Psychological Abstracts covers the world's literature in psychology and related disciplines in the behavioural sciences. Over 900 periodicals and 1500 books, technical reports, and monographs are scanned each year to provide coverage of original research, reviews, discussions, theory, conference reports, panel discussions, case studies, and descriptions of apparatus. $65 per online connect hour, 10c per full record printed offline.

Social Scisearch, 1972-present, 765,000 records.

Social Scisearch (SSCI) is a multi-disciplinary data base indexing every significant item from the 1,000 most important social sciences journals throughout the world and social sciences articles selected from 2,200 additional journals in the natural, physical, and biomedical sciences. The SSCI includes many important monographs as well.

Social Scisearch offers a unique information retrieval technique. In addition to more conventional retrieval by title words of phrases, source authors, journal names, corporate source, etc., it is also possible to search by way of the author's cited references. $70 per online connect hour, 10c per full record printed offline.

Sociological Abstracts, 1963-present, 99,600 citations.

Sociological Abstracts covers the world's literature in sociology and related disciplines in the social and behavioral sciences. Over 1200 journals and other serial publications are scanned each year to provide coverage of original research, reviews, discussions and case studies. The following fields are covered: Methodology and Research Technology, History and Theory of Sociology, Social Psychology and Group Interaction, Culture and Social Structure, Management and Complex Organization, Social Change and Economic Development, Mass Phenomena and Political Interactions, Social Differentiation, Rural and Urban Sociology, Sociology of the Arts, Education, Religion, Science, Health and Knowledge, Demography and Human Biology, The Family and Social Welfare, Community Development, Policy, Planning, Forecasting and Speculation, Radical Sociology, Studies in Violence and Poverty and Feminism, Environmental Interaction. $55 per online connect hour, 15c per full record printed offline.

What's in ORBIT for Me?

With some exceptions all the data files available in ORBIT are also available in DIALOG. One important exception is the International Office of Labour file LABORDOC.

LABORDOC, 1965-present, 67,200 citations.

LABORDOC covers worldwide journal and monographic literature in the fields of economic and social development and industrial relations including such topics as international relations, economic conditions and policies, demography, management, education, law, agriculture, environment and earth science.

How Do You Search?

You need training before you can be let loose on a terminal and you need user codes, passwords and so on. But the actual business of searching is quite straightforward. Figure 1 shows the commands issued and the responses received during a DIALOG search for reading on class size. The educationalist requesting the search asked for: 'A short list of articles and reports, no more than 50, dealing with class size, whether in pre-schools, primary, secondary or tertiary institutions. I want to get a good grasp of the research but I don't have much time.'

The first step, was to ring OASIS, connect to DIALOG and select a file, in this case ERIC, for searching. Once this was done DIALOG supplied a question mark as a prompt. In response, the computer was asked to select documents which had been indexed with the key term 'class size'. The notation /DE * told the computer to search the key words (or descriptors) and to select only those documents in which class size was the main topic. Consequently, the computer ignored documents which dealt with class size only in passing. The reply, in a few seconds, was that there were 192 documents of the kind specified and that these had been gathered together and called set 1. This set contained far more documents than the user would have time to read so the next task was to reduce the size of set 1 without reducing its value as a guide to the research on class size. This was done by asking the computer to identify documents which had been indexed with the descriptors 'state of the art reviews' or 'literature reviews'. The reply was that there were 9,538 documents of this kind in the entire ERIC file and that they had been gathered together and called set 2.

The computer was then asked to combine set 1 and 2, that is, locate documents that were reviews of the research on class size. The computer replied that there were 19 documents of this kind and that these had been gathered together and called set 3.

The procedure was repeated twice more, first to obtain a set of documents that were bibliographies of the research on class size (set 5), then to obtain a list of articles of class size published during 1979 (set 7).

Sets 3, 5 and 7 were then combined into a final set (set 8) containing 46 items — 19 reviews, 8 bibliographies and 19 recently published articles. At this point it was decided that set 8 met the requirements of the end user and the computer was ordered to print the details of the documents in this set. This was done overnight in Palo Alto and arrived airmail within 5 days. The search took slightly more than 5 minutes and cost, when all DIALOG and OASIS charges had been met, less than $10.

What Does It Cost?

The data base charges vary from $25 to $70 or more an hour and the off-line printing charges range between 10c and 20c a record or citation. In addition, there are the costs associated with OASIS, 20c a minute plus 60c per 1000 characters sent or received. At NZCER we have found that a fairly simple search, printing out no more that 50 citations, generally costs around $10. More complicated searches, covering more than one data base might cost anything from $20 up, the main variable being the number of citations printed.

Pros and Cons of Online

1. The capital costs, if nothing else, ensure that when a library or information service begins to make use of an on-line link there is an immediate and very obvious increase in the cost of providing information services.
2. This increase in cost is offset by greatly increased efficiency in the retrieval of information. For example, to provide a manual search service as thorough as DIALOG one would need to employ some very highly skilled reference librarians *and* make substantial outlays on reference journals and indexes as well. And even if the librarians were as thorough they could never match the speed of the computers. Computer searching does save everyone a good deal of time but it is the end user, the person who asks for the search, who saves the most time. This is because the searcher has to map out the strategy he or she is going to use *before* going on-line. If the search is a complicated one, involving more than one data base, this might take 30 minutes or more. If the data base is one the searcher has not used before it can take longer to prepare. One has also to consider the time taken talking to the end user, to make sure you understand exactly what it is he wants, not to mention the time needed to keep up with new developments on the system, read the newsletters, and so on. By contrast, the end user has only to formulate his request — and then come back a week later, by which time his printout will have arrived. He is thus able to spend more time studying the literature, refining his research design or just sitting in the sun.
3. One cannot, if you have an on-line service, dispense with reference journals, and indexes entirely since there will always be times when a manual search will be less expensive and possible almost as quick. But having an on-line capability does mean that a library need not struggle ceaselessly to acquire every book and journal in its field. The benefits of this, both in money and storage terms, are obvious.
4. The different data bases do not always extend back as far as one might wish but in a field like education, where the emphasis is on recent research, this is only occasionally a disability. Of much more importance is the fact that the on-line information is usually more up-to-date than the information available in the printed version of the data base. Moreover, the on-line version is more 'searchable' than the printed version. For example, the term 'meta-analysis' has recently come into vogue among educational researchers, to describe a new technique for the re-analysis of the findings of groups of research studies. There are a handful or so of documents in the ERIC collection that are either examples of 'meta-analysis' or discussions of it but since 'meta-analysis' is not an ERIC descriptor or keyword yet, these documents are difficult to locate using the keyword index of the printed ERIC volumes. But any compound word or set of words can be searched in the on-line version, whether they are part of the title, or used in the abstract, or anywhere else. This is called free-text searching and it is an extremely powerful way of retrieving information which cannot be got at via the ERIC descriptors or keywords. School climate is another compound term which is not an ERIC descriptor but by linking the two words together with one of the free-text search symbols (like this — 'school(w)climate') documents dealing with school climate can be retrieved.
5. On-line searchers need to know the commands used in the retrieval system they are using,the structure of the data base or bases they are searching, and they need to be familiar with the trends and terminology of research in a particular field as well. They also must be able to get on well with those who want to use their skill and training. Such people are likely to be in short supply. Generally speaking, the less experience the searcher has, and the greater the distance between searcher and end-user, the more costly and unsatisfactory the search. The main implications relate to the selection and training of on-line searchers but since, in the not-too-distant future, most major libraries, research organizations and even commercial companies will have on-line facilities, potential end users need to keep the human element in mind as well.
6. Data bases vary in their internationalism. In ERIC, for example, only about 5 percent of the records come from outside North America. However,it should be noted that efforts are being made to increase the international coverage of this data base. The point, however, is that one must always know exactly what is included in a particular data base, and take steps to remedy any deficiencies, usually by manual searching. In the case of the class size search mentioned earlier, for example, an important Australian study (Lafleur, C.D. et al., *Class Size Survey*, Australian Government Publishing Service, 1975 AACRDE Report No.4) had not been included in the ERIC data base. Nor had a useful Canadian document. (Shapson, S.M., *Optimum Class Size? A Review of the Literature*, Research Department, Board of Education, Toronto, 1972). Both were known to the searcher as it happens, but both could have been picked up by a manual search of the *Australian Education Index* or *Canadian Education Index*. A third document (Pidgeon,

D. 'Class Size as a Factor in Pupil Performance: A Policy Analysis.' In *New Patterns of Teacher Education and Tasks: General Analysis*, OCED, 1974. Summary in *set 75*, No. 1, item 6) had also failed to find its way into the ERIC files. It had, however, found its way into *set* and we were able to provide our end user with a photocopy. Finally, two good and quite recent articles on class size research (Burstall, C. 'Time to Mend the Nets: A Commentary on the Outcome of Class-Size Research', *Trends*, 3, 1979, 27-33; Cullen, B.D. 'Lessons from Class-size Research — An Economist's Perspective', *Trends*, 4, 1979, 29-23) in the British journal *Trends* were not retrieved either — because *Trends* is not indexed by ERIC. As it happens, the issue of *British Education Index* which indexes these two articles has not yet appeared so they were picked up during the continuous sweep of current issues of educational research journals NZCER's research information division carries on, class size being a priority area.

Computer searching is quick, usually effortless and it can be a lot of fun. But the information available on-line is incomplete and it has to be supplemented. So, paradoxically, an on-line link forces a good information officer or reference librarian to make far more extensive use of 'old-fashion' manual searching aids. The other point is that one must not regard an on-line link as somehow different from other more conventional ways of organizing and finding information. Indeed, the better use comes when the on-line link is integrated into pre-existing information or reference services. The message, for the end user, is that a DIALOG or ORBIT printout is not the final word. If you need information from Australia, Europe, Britian or New Zealand ask for a manual search as well.

7. New Zealand's educational documentation is not yet under full control and, in general, it is often very difficult to quickly and accurately locate New Zealand documents on any particular topic. This situation, coupled with the sophistication of the on-line services, has laid New Zealand open to a kind of information imperialism. It is very important to remember that, whatever the superficial resemblances, our problems are not identical with those of other countries. So the solutions we attempt have to be of our own making. On-line information, or indeed any foreign information, can assist us in helping to understand our problems and in mapping out likely remedies but it cannot be a substitute for this process. We urgently need a New Zealand data base for educational documentation every bit as sophisticated as ERIC, but that is another story.

Conclusion

On-line information services are here to stay and will be of increasing benefit. But the ones available at present in New Zealand do have some important limitations and these need to be throughly understood.

The good news, nonetheless, it that now it is possible to locate vast quantities of information literally at the push of a button.

Printouts Available

NZCER has done a number of searches, principally in the ERIC file, in recent months and we have retained some copies of the various printouts received.

These will be available, while supplies last, to any *set* reader interested enough to write in to us.

The printouts we have are:

Class Size	(as described in the text, 46 records)
Meta-Analysis	(11 records)
School Climate	(review articles, bibliographies, recent studies, 129 records)
Evaluation of Bilingual Education	(100 records)

Search Service Available

The on-line link to DIALOG and ORBIT that NZCER has is fully integrated into our general information services and is therefore available to teachers, researchers and educators in the usual way. However, we do charge when the on-line service is specifically requested. If you are interested in making use of this particular service write to us and let us know what information it is that you need. We will send you a search request form, and give you some idea of the costs likely to be incurred. The address for information services is: Research Information Division, NZCER, P.O. Box 3237, Wellington.

Item 4
(A)

set research information for teachers
number two 1980

Testing the Reading Comprehension of Second Language Beginners:

An Integrative Approach

By Richard B. Baldauf,
James Cook University of Northern Queensland

Teachers have always needed valid tests to assess students' proficiency so that the most appropriate classroom instruction can be used. This is particularly true in the current educational climate with its growing emphasis on accountability, since teachers need good testing techniques to show that their work is worthwhile.

For the teacher of second language (L2) beginners the problem of developing valid tests is complicated by the apparent lack of suitable types of test questions. The questions must be easy enough for the young neophite learner to understand and complete unaided, despite his or her limited language production, test taking, and school skills. At the same time, these questions must measure only the skill being evaluated and not some other skill or combination of skills. Unfortunately, most L2 measurement textbooks are not very helpful in overcoming these problems because they concentrate on questions appropriate for older students, who have a broader range of experiences and skills.

L2 teachers must also deal with the gradual shift which has occurred in the 1970's away from the audiolingual method of language teaching to an emphasis on communicative code competence, that is, from learning language patterns, to using language in appropriate contexts. This change in instructional methodology has led to a shift in L2 language testing among many L2 specialists. Teachers must now decide what types of test questions to use to fit their style.

In practice, this change in language testing has meant a shift away from discrete-point testing (which emphasized sampling individual grammar, vocabulary or auditory discrimination tasks) to integrative testing (which emphasizes listening and reading comprehension measures, particularly cloze tests.) One theorist argues that this distinction between types of tests may not be conceptually valid since discrete-point and integrative tests produce statistically similar test results! However, the test questions themselves are quite different in design, and teachers are still faced with the need to select test questions.

The approach recommended here focuses on testing L2 reading comprehension, although the same general approach, with modification, could also be applied to L2 listening comprehension test questions. The approach recommended is based on integrative testing since this style is close to what happens when we read and thus has built-in validity.

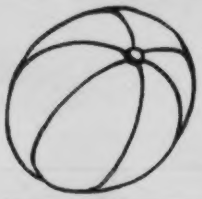
For convenience there are three stages which are discussed in the sections which follow. Sample questions are provided from tests developed for use with Pacific Island English-as-a-second-language (ESL) children. Since many of the questions on these tests were developed co-operatively by local teachers and curriculum specialists, they are models of the kinds of test questions teachers could write themselves with only limited help from testing specialists.

Lexical Semantics (word meanings)

Testing reading comprehension through the use of vocabulary is common. However, the integrative lexical semantics test is more limited in both form and use than traditional vocabulary tests.

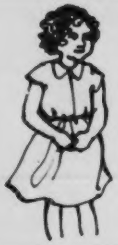
1. It is used as the first stage of integrative testing and is appropriate only for L2 learners who are just beginning and who are not yet proficient readers in their native language. Students, regardless of age, who are literate in their native language, probably do not need to be tested at this level. Students who are able to handle test questions confidently at the next level should be encouraged to do so. Each lexical semantics test question is equivalent to reading a story of limited scope and content.
2. Integrative lexical semantic comprehension tests are restricted so that the pupil needs to read only the word being tested. Traditional vocabulary questions requiring synonyms, opposites, paraphrasing, words in context, or definitions, require comprehension of words and/or concepts which may be more difficult than the vocabulary being tested. If a pupil gets such questions wrong, the teacher does not know whether it is the vocabulary word or the context which the child cannot read and comprehend.

Example I



pretty	here	ball	box

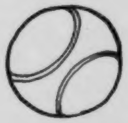
Example II

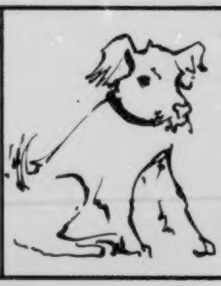


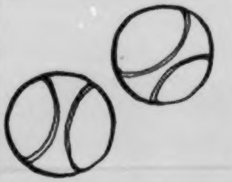
boy	girl	goat	big

Example III

It's a ball.

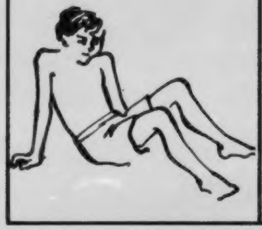


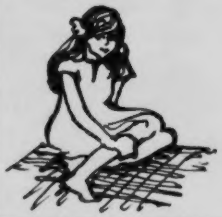


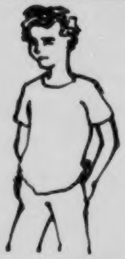


Example IV

Tom is sitting.





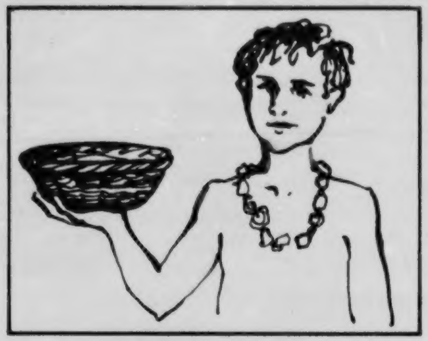


Sentence Semantics (sentence meanings)

As pupils' vocabulary expands and linguistic structures are developed, they are able to read, integrate, and comprehend short phrases and sentences. As these skills develop, the testing of reading comprehension should be gradually shifted to the level of sentence semantics. The questions should be written to avoid the need for the pupil to read extraneous material. Examples III and IV provide an illustration of this type of question.

As pupil's reading skills increase, more complex sentence semantic questions with a multiple-choice format may be introduced. In Example V a picture still provides the stimulus for the correct response, while example VI tests the pupil's sense of time using an entirely verbal question based on sentence rearrangement.

Example V



(a) Tomi has a basket on his head.

*(b) Tomi has a basket on his hand.

(c) Tomi has some baskets on his hand.

(d) Tomi has no basket.

Teachers need to be sure that pupils understand the directions to questions — like those in Examples VI and VII. The questions must accurately reflect reading comprehension, and not an ability to read and follow directions. Understanding directions can be helped through the use of practice questions.

Example VI

(1) The doctor gave Sina some medicine.

(2) Sina is feeling much better.

(3) Sina was very ill.

(a) 1, 2, 3.

(b) 2, 1, 3.

*(c) 3, 1, 2.

(d) 3, 2, 1.

A number of other types of sentence semantic questions have been devised which avoid extraneous reading. For example, recognizing paraphrases (example VII) and comprehending 'hidden' meanings (example VIII).

Example VII

I want each of you to carve a mouse for me.

(a) I don't want either of you to carve a mouse for me.

(b) I want each of you to have a carved mouse from me.

*(c) I want each of you to carve me a mouse.

(d) I want one of you to carve a mouse for me.

Example VIII

The King ordered the cat to be brought in.

(a) The King told the cat to bring something in.

*(b) The King told someone to bring in the cat.

(c) The King told the cat something.

(d) The cat brought in something ordered by the King.

Extended semantics (paragraph meanings)

As pupils' reading competence increases, and they are able to comprehend extended prose, it is possible to introduce extended semantic testing based on the cloze procedure. Cloze tests tap the pupils' capacity to utilize 'organizational redundancy' or 'constraints' which research has shown to be a key factor in language.

Cloze tests also avoid the problem of using test questions which are structurally more complex than the reading passage being tested.

In recent years three types of cloze tests have been described in the literature for use with L2 pupils: standard cloze, multiple-choice cloze, and matching cloze. While each type of cloze test has its advantages, matching cloze is less difficult for pupils to complete and can therefore be used sooner. Matching cloze also seems to have some advantages over comparable multiple-choice cloze tests.

Matching cloze tests are constructed by selecting segments of approximately 25 to 35 words in length and deleting five words, usually every fifth.

Tom is going to school.
Mary is going to school.
Tom and Mary are walking slowly.
Mary: 'Where's Anna, Tom?'
Tom: 'Look. She is running to school.'

becomes

Tom is going to ....
Mary is going to ....
Tom and Mary are .... slowly.
Mary: 'Where's Anna, ... ?'
Tom: 'Look. She is .... to school.'

And a set of words is supplied to match with the blanks.

Advanced readers are given six, one being a 'distractor'.

walking
Tom
school
running
school
from

However, this is a most unsatisfactory set of blanks. **School** occurs twice, and a previous word **walking** could fill the **running** gap. In less simple prose we could start at a different point, e.g., blanking out the first word, then the sixth, eleventh etc. Here we move to an acceptable word one further on or one further back.

Tom is going to ....
Mary is going .... school.
Tom and Mary are .... slowly
Mary: 'Where's Anna, ...?'
Tom: 'Look. She .... running to school.'

Here is a much better example:

Example IX

Walking

Peter is walking with Tom and Mary is walking with Anna.

... are they going?
... going to school.
They're ... fast.
Peter and Tom ... clean.
Mary and Anna are ..., too.

to
clean
are
they're
walking
where

Conclusion

The three levels of integrative testing provide a conceptually valid method for testing the reading comprehension skills of second language beginners. Test items of this type have been developed by Pacific Island teachers and curriculum specialists and are being used in locally developed reading comprehension tests like the **Micronesian Achievement Test Series.**

However, to design tests which are really reliable and valid, teachers must take care to follow general test construction principles. Of particular importance is being sure that pupils' understand the test directions for each type of test question through the use of practice tests and sample questions. Only then can we be sure we are testing reading comprehension and not the ability to read and follow directions.

Notes:

Richard Baldauf, James Cook University of North Queensland has been involved in L2 test development programmes in American Samoa and in Micronesia since 1973. He is the author, with Ivan Propst of 'Matching and Multiple-choice Cloze Tests' in *Journal of Educational Research*, Vol. 72, No. 6, 1979.

Integrative testing is explained in Oller, J.W., and Richards J. *Focus on the Learner: Pragmatic Perspectives for the Language Teacher*, Rowley, Mass., Newbury House, 1973.

Farhady, H. is the theorist who argues that the tests are not conceptually distinct, in *TESOL Quarterly*, Vol. 13, No. 3, 1979.

The examples I, II, III, IV, IX are adapted from *The Micronesian Achievement Test Series* (MATS) Reading Level I, Form A. (Trust Territory Government, 1979) Berkeley, California, Educational Testing Service, 1979.

Examples V and VI are from Adkins, D., Chin-Chance, S., and Payne, F. *Final Edition of a Level VI English Reading Test for Students in American Samoa*. Honolulu, University of Hawaii, 1973.

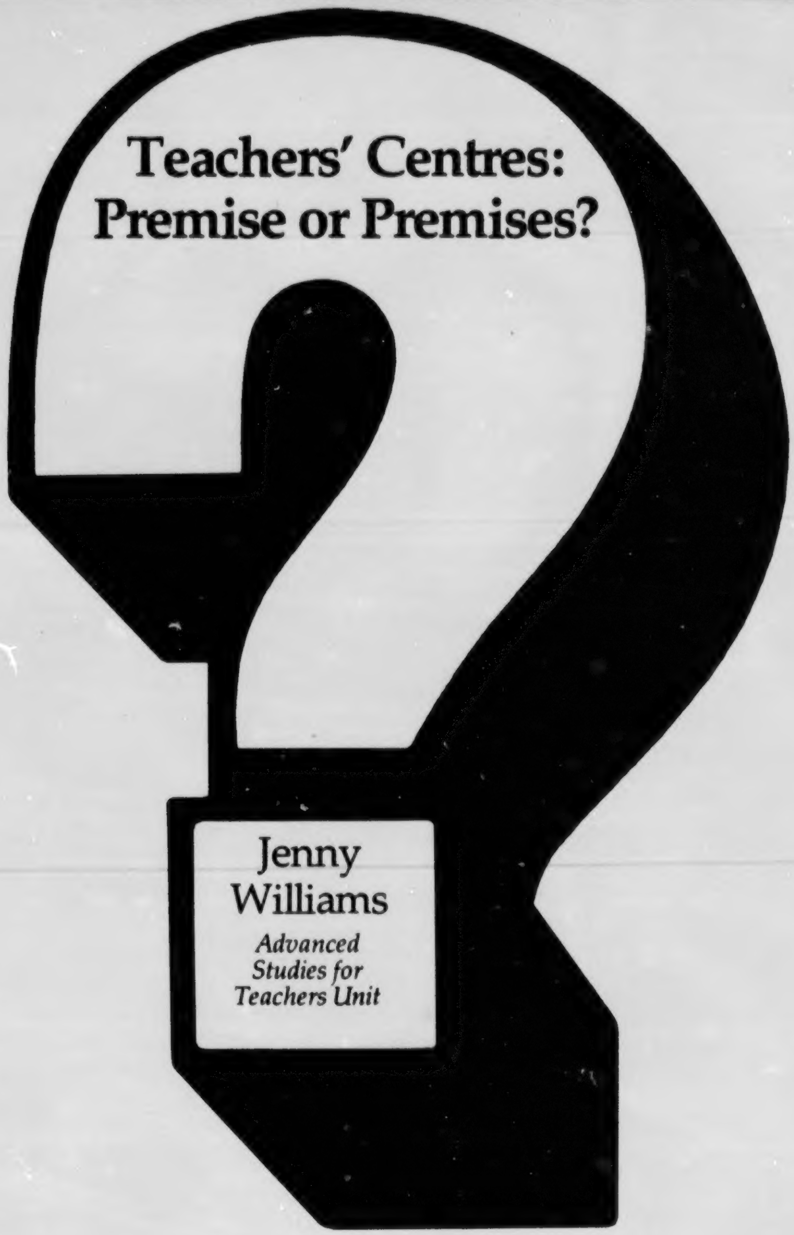
Examples VII and VIII are adapted from *Language Arts*, Pago Pago, Department of Education, 1973.

Cloze Tests
Standard cloze tests are described in Elley, Warwick, 'A Close Look at the Cloze Test', *set*, New Zealand edition No. 1, 1977, Australian Special Edition 1979. Multiple-choice cloze tests are described in Vallette, Rebecca, *Modern Language Testing (2nd Edition)*, N.Y. Harcourt Brace Jobanovich, 1977. This book has many examples of test items using pictures. Matching cloze tests are described in Propst, I.K. and Baldauf, R.B. 'Use Matching Cloze Tests for Elementary ESL Students', *The Reading Teacher*, Vol. 32, No. 6, 1979.

Item 4
(NZ)

set research information for teachers
number two 1980

Teachers' Centres: Premise or Premises?



Jenny Williams
Advanced Studies for Teachers Unit

One of the most interesting and remarkable developments in education during the 1960s and 70s was the growth of the teachers' centre movement. A British invention, it almost immediately attracted a great deal of interest from educationalists in other countries, so much so that during the 1970s, it became, according to Robert Thornbury, one of Britain's major invisible exports.

By the mid 1970s there were over 100 centres in the United States, all influenced by the British model. In Australia an ambitious scheme providing federal funds for groups of teachers who wished to start centres was underway and there was great interest and enthusiasm for the centre movement in Canada, the countries of Scandinavia and New Zealand. In the meantime, the number of centres in Britain had grown to over 500.

The British Centres

The geography of Britain, political as well as physical, ensures that the British centres vary enormously in almost every respect. Purpose-built centres are rare. Almost any kind of building, youth club, aerodrome hanger, sports pavilion or town hall, as well as old country houses, redundant school buildings, parts of existing schools and, in some cases, colleges of education can be found harbouring a teachers' centre. At one extreme a classroom might be transformed, at the sound of the 3 pm bell, into a centre. At the other, a National Union of Teachers survey in 1972 found one centre which employed five barmen and fifteen waitresses.

Some centres are single-subject centred; others multi-purpose. Some see their main and only function as the provision of resources but all of the centres function to greater or lesser degree as resource centres — housing materials or equipment that teachers might use or borrow.

These resources might include any of the following: books, pictures, slides, filmstrips, films and other 'software'; equipment for the production of visual aids and learning packages; and reproduction equipment of some kind or another, so that teachers can make copies of maps, diagrams or other documents. Generally speaking, the more resources available the more popular the centre, and some centres stress this aspect, hoping that teachers popping in to borrow a film or use a stencil cutter may be persuaded to take more of the things the centre offers.

Not all centres, of course, can offer a fully comprehensive range of resources but many act as a 'clearinghouse', keeping records of where facilities and resources are locally available. And many centres arrange exhibitions of educational equipment and publications, thus giving teachers opportunities to find out about new books and audio-visual aids. Exhibitions of both children's and teachers' work give opportunities too for the exchange of ideas and techniques.

Besides the resources aspect, in-service training and curriculum develovment are other important activities that might be stressed. Given the opportunity to determine their own in-service programmes, teachers chose to use teachers' centres to the extent, that 80% of in-service programmes take place after 4 pm, and at the teachers' own expense.

Some centres serve as few as 22 teachers, others as many as 8000. Even the name Teachers' Centre is not universal. A 1979 Schools Council survey, for example, found all of the following names in use: Curriculum Development Centre, County Centre, Educational Centre, Resource and Technology Centre, Advisory Centre, Research and Development Centre, Curriculum Studies Centre, Experimental Centre, In-Service Training Centre and Schools Development Centre.

So, too, the title used by the person in charge is equally as diverse, including director, warden, teacher-in-charge, co-ordinator, teacher adviser, consultant teacher, administrative officer, development assistant and secretary. The title of warden is the most usual however.

Perhaps the only thing one could assume about a teachers' centre is that it will at least have a tea urn. But even in the social aspect the centres very tremendously. Some provide tea and biscuits and little else. Others arrange a variety of activities — folk song evenings, bridge clubs, discos, car rallies, and, of course, a bar.

Staffing provisions vary as well. A 1974 survey showed that nearly 60 percent of the centres had the equivalent of two full-time staff, including the warden. But many centres, particularly in rural areas, have only a part-time warden — sometimes without a separate phone, and with little in the way of clerical help or duplicating facilities.

As far as management and control go there is a tendency for centres to possess a committee incorporating teacher representatives, as well as representatives from the local authority and the local college of education. Some committees decide all financial and policy issues. Sometimes the wardens make these decisions. In other situations a sub-committee structure is used. The 1972 National Union of Teachers survey found that in about half the centres surveyed the activities of the wardens were governed by a constitution; about a quarter of these centres were entirely controlled by teachers and about half of them were controlled by a management committee on which teachers were represented. Centres without a constitution usually had a management committee acting in an advisory capacity. This could mean that the warden's role is prescribed almost completely by the committee; it could also mean that the warden is left to run his centre as a 'benign dictatorship'.

Given the diversity of physical settings, the variety of educational objectives pursued and the differences in size, facilities and management structure disagreement as to what exactly teachers' centres do is almost inevitable.

One writer called it 'a place to pool ideas'. Another thinks it is 'an institution that is geared to respond to, and to satisfy the professional needs of teachers in the area in which it is located'. A third claimed it was the 'local physical facilities, and self-improvement programs organised and run by teachers themselves for the purpose of upgrading educational performance'. A fourth said it was 'an incubator for ideas, an informal centre', while the Schools' Council said teachers' centres were 'the hub of a wheel of activities'.

When the Schools' Council produced a paper, **What is a Teachers' Centre,** for discussion by Teachers' Centre Wardens in 1975, nine different roles Centres could play were suggested:

(i) A place where teachers find out about and discuss various innovations — new courses, projects, new practices (like team teaching or independent learning), new equipment, (an **Information** centre).

(ii) A place where teachers who expect to adopt some novelty can receive appropiate instruction, (an **In-Service Training** Centre).

(iii) A place where teachers concerned with a particular new project can collaborate with the originators in 'feed-back', or make their own contributions to the project, or translate the project's general ideas and models into a form practicable in their own particular circumstances, (a **Feed-Back and Adaptation** centre).

(iv) A place where teachers can continue to use and improve a project's work when the original team has disbanded: 'A project', wrote one Teachers' Centre Warden, 'has a moment of conception, a gorgeous gestation period, the moment of birth and who is left holding the baby?' (a **Dissemination and Support** centre).

(v) A place where teachers, suitably supported and led, may initiate their own curriculum development projects; or, less ambitiously, devise for themselves and share with others, items useable in their classrooms. These will often exploit opportunities which the local environment provides, (a **Curriculum Resource Development** centre).

(vi) A place where equipment too expensive for most individual schools — and ideally some clerical and professional help — will enable a teacher to make copies of materials he needs, (a **Reprographic** centre).

(vii)A place where resources of potential value to teachers can be recorded and stored — samples of courses, a library, master copies of television and sound broadcasts, maps, documents, etc., (a **Multi-Media Library** centre).

(viii)A place where someone acts as a link between schools, helping them to collaborate and learn from one another, helping them with particular difficulties, putting them in touch with those more expert, etc., (an **Advisory** centre).

(ix) A place where teachers from different schools can gather socially, or for some specific purpose, (organising local CSE examining, for example, or discussing special problems such as reading difficulties); to pick up ideas or to talk through their fears, prejudices and hopes about contemporary developments, (a **Meeting Place).**

Strengths and Weaknesses

At the end of the 1970s the British teachers' centres display a mixture of strengths and weaknesses. The strengths were summarised by Roland Morant as follows:

1. teachers' centres are accessible geographically to many teachers;
2. control by teachers is exercised through teacher dominated steering committes;
3. short term professional needs of teachers can be responded to rapidly by teachers' centres;
4. teachers' centres premises provide a neutral meeting ground for teachers, advisers, and other members of the education service.

The weaknesses spring from the lack of human and material resources, and perhaps also from a discrepancy between the scale of the enterprise and the objectives pursued. As a result they often have to concentrate on inexpensive fringe activities, and they have difficulty therefore attracting clients. Consequently, they are vulnerable to the charge that they are both ineffectual and inefficient and, in these days of cost analysis, accountability and budget restraints, weaknesses of these kinds can be fatal.

It seems likely, therefore, as we move into the 1980s, that the British teachers' centres will need to demonstrate their adaptability and cost effectiveness if they are to survive, let alone grow. Thornbury remarked that maybe Britain had produced a prototype which it might fall to others to perfect, and certainly at the present time there seems to be more interest and excitement about teachers' centres outside Britain than in the country of origin.

If so, we must be careful to extract what is useful from the British experience, and adapt the concept to our own needs.

Learning from the British

Harry Kahn argues that a teachers' centre is not only a place but also a concept — 'a premise and premises'. In Britain both terms have been open to the widest interpretation. As a result there has been uncertainty about staffing resources facilities and other matters. So the first lesson is to decide what you want your centre to do and to set it up accordingly. The second lesson is that teachers' centres can fulfil many roles — but not all at once. But whatever a teachers' centre does the qualities and personality of the warden are crucial.

J.G. Owen identified the warden of a teachers' centre as 'the new man' in 'a job which is sufficiently novel to protect him against excessive complexities of role definition'. He visualised the warden as an 'educational entrepreneur', in the sense that he acts as the intermediary between 'educational capital' and 'educational labour'.

He should also have, according to David Self, 'an impeccable memory for names, requests and resources; the enthusiasm of a Butlin's Redcoat on a wet day; and readiness to forsake all social life during term time'. And Geoffrey Bennett says that a warden should be able to act as 'host, technician, lecturer, technical adviser, secretary or chairman to meetings, administrator, P.R.O. school visitor, caterer, librarian, provider of information and teacher'.

These descriptions raise obvious questions of staff selection, training and experience. So the third lesson is that we must look carefully at the warden's role.

The fourth lesson is that whatever the professional role played by the centre provision must also be made for the concept of the teachers' centre as a social centre for teachers. George Culling put it this way:

> It is essential that a teachers' centre should be bright and attractive with facilities for rest and refreshment and all teachers' centres have a lounge or common room where light refreshments are available . . . a teachers' centre has both a professional and social function . . . Teachers should feel attracted to their centre where, as well as participating in professional activities, they may meet their colleagues in reasonably comfortable and attractive surroundings. A major purpose of a teachers' centre should be to break down the isolation of teachers . . . To the young teacher the centre is his club where he will meet other young people with similar interests to his own.

The social aspect is important, especially to the newly qualified teacher, and to the teacher newly arrived in the district. It is the meeting ground for all teachers, from pre-school, to tertiary, and this aspect should be stressed.

Whatever the educational objectives, the physical setting must be appropriate as well. It is the opportunity for the employing authority to demonstrate that they value their teachers and intend to support them. Culling suggested that the basic physical components of a teachers' centre should be:

1. space for lectures, discussions and seminars;
2. a resource centre where teachers may borrow books, pictures, slides, tapes, cassettes etc.;
3. a reprographic unit where teachers may duplicate textual and visual materials that they need for teaching purposes;
4. a practical workshop with benches and tools where teachers may make simple visual aids and equipment;
5. an exhibition space where the latest books and equipment may be examined;
6. room for all kinds of teachers' meetings: (curriculum groups, meetings of professional associations, etc.);
7. a comfortable lounge where teachers may relax;
8. facilities for the showing of films, slides, etc.;
9. a cafeteria service where light meals are available.

We must be careful however, that we don't focus all our attention on the premises, or the 'nuts and bolts' of providing resources. The essential premise of the teachers' centre concept, and the reason for its rapid growth, is that it is 'for the teachers, of the teachers, and by the teachers'. The British teachers' centres have given teachers the opportunity to determine what it is they need, and will use. We must be careful to ensure that New Zealand teachers are given the same opportunity, as well as adequate material resources to realise that opportunity.

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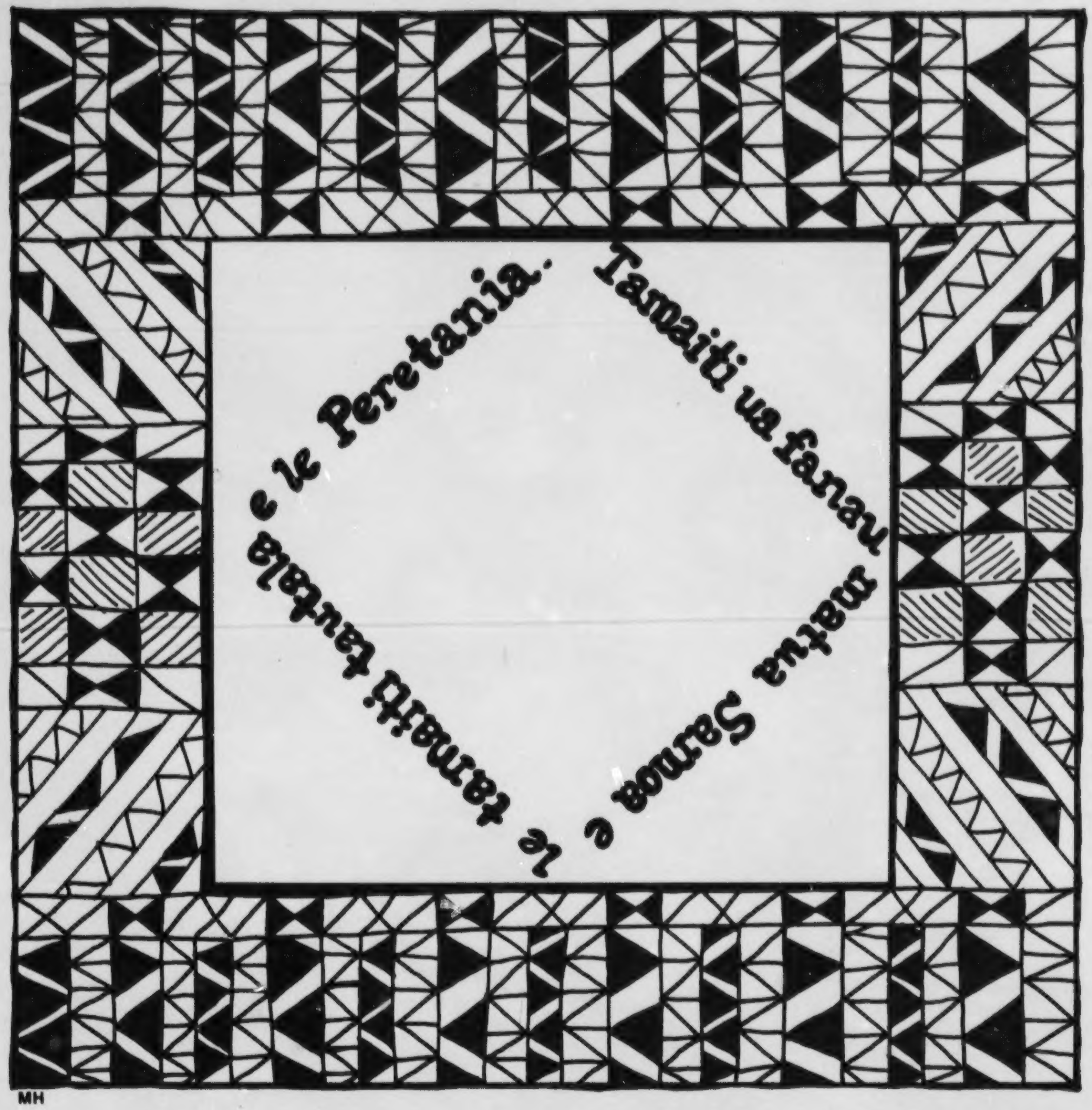

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The Same Mistakes: But More Often

Second Generation Samoan Children Speaking English

By Isa Moynihan
Christchurch Teachers' College

In Christchurch the number of Pacific Island children is small, they live in every area of the city, from 'working class industrial' to 'middle-class suburban', and most are New Zealand-born Samoans. The families rarely shift and their children rarely change schools, at least between the ages of five and eight. Under such conditions it seems likely that any differences between their spoken English and that of native-English-speaking children will highlight difficulties, and might even provide some clues to the reasons for the difficulties.

Children aged seven to eight years were selected for this research because it seems to be the age where any difficulties the children are having become more obvious: they are trying to cope with the increasing demands of reading and writing. Much of the New Zealand research has noted that there is a 'two-year gap' in the language performance of Polynesian children compared with that of their Pakeha age-mates.

Dialects and Standards

New Zealand English, like Canadian or South African, sounds different from British English. New Zealand has only one dialect but we can recognise speakers as anything from extremely careless to extremely careful. We can also readily identify 'accents'. In other words, although few of us would label any language as inferior, we are aware that there are 'standards', and we expect teachers to maintain those standards. Is standard English a matter of pronunciation? or of vocabulary choice? or of 'grammar'? or of all of these? Whatever the linguists may argue about it, the hard educational truth is that children who speak a nonstandard form of English are at a disadvantage in the larger community. For the Samoan children in the present study, the average socio-economic rating was 5.38 on a six-point scale, with 6 as the lowest rating.

I am not concerned with arguing whether a family's lower socio-economic status is one of the causes of their nonstandard English or one of the results of their 'different' English. Rather I wish to describe what, precisely, those differences were; decide whether they are likely to interfere with a child's progress, and, if so, point out what teachers can do to help. If the language differences in themselves are not significant, then perhaps we should be looking elsewhere for explanations of the apparent lack of success of Polynesian children in later school years.

Methods

To see whether the language of seven- to eight-year-old children differed noticeably from that of educated adults in a similar setting (informal, conversational) I listened to over fifty hours of tape-recorded conversations with over one hundred children, Samoan and New Zealand. By a careful analysis I then attempted to isolate those variations which were:

(a) common to both groups (therefore likely to be normal for that age-group and that language situation);
(b) only or mainly among the Samoan group (therefore likely to represent areas of particular difficulty since they were still there after so many years' exposure to English).

In analysing, I focused on grammatical categories, (pronouns, verbs, negatives, and conjunctions, mainly), with some attention to vocabulary and to the children's production of phonemes (significant, or meaning-carrying sounds). The English-speaking children came from middle socio-economic families and were identified as being of average general ability.

Variations Common to Both Groups

Linguists have made a useful distinction between 'mistakes' and 'errors' in spoken language. A mistake is a temporary lapse — a slip of the tongue — due to inattention, lapse of memory, over-excitement, etc; an error is not a tempory lapse — it appears consistently in similar contexts and is likely to be due to a lack of knowledge. When the speaker is a native-English-speaking child we tend to describe his or her variations as mistakes. But when English is not the child's first language we tend to see the same variations as errors.

In the present study, for example, several children, both New Zealand and Samoan, in describing a picture said things like:

He's her sister
She's his brother

One might assume, if one didn't have this evidence, that only Samoan children would produce such sentences, because of their well-known difficulty with pronouns. Listening to the tapes, however, one could see that the useage was a mistake, a temporary lapse, not an error, and probably due to the alteration in close sequence of masculine/feminine nouns and pronouns.

When the English-speaking children were uncertain we can assume that we have forms of speech which are still developing towards adult usage.

The following examples illustrate those which occurred most often.

Variations in Verb Usage

Past tense (threw, caught, hit) and past participle (thrown, caught, hit) forms of irregular verbs caused difficulties:

He throwed/catched/hitted the ball, etc.
He's threwn/caughted/hitten the ball, etc.

Multi-Word Structures

Whenever a structure required more than one word to convey its full meaning, children tended either to omit or substitute words, or to alter word order:

she's not fast as me (as fast as)
it looks as he's winning (as if)
this one is not so nice like that (so/as nice as)
he ran off because the fire (because of)
he's sitting up top on the car (on top of)
they're going to blow up it (blow it up)
he's building up it (building it up)

It was noticeable that, in general, even the New Zealand children had some difficulty in expressing ideas about similarities and differences, and that the problem was apparently caused by the structures and vocabulary and not by the concepts themselves. Children, for example, did not use words such as 'similar' or 'alike', saying instead:

it's a bit the same
that one's quite the same (= not quite)
they're both quite the same, etc.

Use of Relative Pronouns

Children from both groups frequently either substituted 'what' for 'that' or 'who', or they left out the pronoun in contexts where it was obligatory;

she's the one what did it
where's the boy was over there?
I've got a brother goes to that school

Studies of language development among English-speaking children have shown that the relative pronoun is among the later-developing structures, and evidence from the present study suggests that even by the age of eight children may not have full control over its use.

Variations in Phonemes

Again, the similarity between the groups was remarkable. The variations were either associated with sounds which are known to be late-developing among English-speaking children (dʒ (in *jam* and in *ledge,* for example), or were caused by missing front teeth so that the sound of *th* became *f* or *s* (*frow, srow,* for *throw,* etc.).

Even more remarkable was the lack of evidence of difficulty which could be attributed solely to the influence of the Samoan sound system. This seems to confirm the view that an early start is a great advantage when acquiring the sounds of a new language. New arrivals among the Samoan children showed the expected lack of distinction between voiced and voiceless stops, for example, notably with the pairs /b/ and /p/, /d/ and /t/, /v/ and /f/ (*five* became *fife; table* was *taple,* etc.). Consonant clusters are always cited as causing difficulty to Polynesian children because such clusters do not occur in Polynesian languages. Again, in the present study, there was little evidence of this difficulty appearing only or mainly among the Samoan children. Only eight examples were noted in the sample, and four of these were clusters with the *th* sound in combination with *m* or with *r*. The words were: *throwing* (pronounced *flowing*) and *something* (pronounced *suffink* — sounds also produced by some o f the New Zealand children in the sample). The remaining examples involved the combination *ft* in the words *lifting* and *lifted*, and were produced by children from the same family (as *liffing* and *lif*).

There was strong evidence of the influence of peer-group and playground language on the Samoan children. The most interesting example, I think, involved the pronunciation of the words *used* and *usually*, which children from both groups produced with an initial *n* sound:

> *I nused to live there*
> *I nusually watch th*[illegible] *programme*, etc.

The New Zealand children, however, inserted the *n* only after a vowel sound (as in the examples given) but some of the Samoan children seemed to have picked up those words as beginning with *n*, so that they naturally said things like, *as nusual* and *she must've nused it*.

Variations Peculiar to the Samoan Children

It was possible to identify precisely those areas where second-generation Samoan children differed significantly from their New Zealand age-mates. It was also possible to formulate a theory to account for these variations — which were not part of first language development for the age-level.

1. not sounding the *-ed* of the regular past tense, especially before *d* or *th;*
   Example: *he jump down; he bat the ball*
2. not sounding the contracted form of *is* and *are* especially when needed to form present continuous tense and after *he* and *she;*
   Examples: *he sitting on the car;*
   they running away;
   they looking
3. using *on* for *in* in certain contexts, and *from* for *by* when describing any kind of injury;
   Examples: *we go on August;*
   on winter
   it's on the pram (in);
   he got cut from the glass (by)
4. omitting the weak forms of *the* and *a;*
   Examples: *boy fell* (a);
   all cars (all the)

The isolation of these specific items was made possible only by a careful phonetic analysis of the scripts, but the effort was amply rewarded. It showed, for example, the importance of looking at the whole context and of remembering the effect of spoken, continuous discourse on sounds. In (1) above, for example, the sounds involved were /t,d/ occurring in final position and usually followed by /d/ or /ð/. In normal speech one does not produce two distinct sounds in such contexts but tends to run them together. Thus, *he jumped down* will sound very like *he jump down.*

Another important characteristic of connected speech is that we use what are called the weak forms of pronouns, articles and prepositions because those words are normally unstressed. To produce strong forms would sound very unnatural, unless one intended the emphasis, or wanted to sound like a computer.

Why did these four specific areas of uncertainty remain among the second generation Samoan children after two to three years of schooling? As shown in the four examples it is not just sound, or grammatical complexity that makes errors persist. If a part of language is stressed in speech, if it carries a lot of meaning, if it performs as essential grammatical function, it gets extra attention. Linguists say it has prominence or perceptual salience. If we look at each of the four areas of uncertainty we can see that most are not at all linguistically prominent.

See the table.

The potential for confusion is greatest when, in addition to lack of prominence, there is the kind of subtle distinction illustrated by, for example:

> *my birthday is* on *August the fourth*
> *my birthday is* in *August*

or the idiomatic usage shown in:

> *the players are* on *the field.*
> *the cows are* in *the field.*

Spoken stress	Semantic load (meaning)	Essential syntactic (grammatical) function	Comment
1. Not sounding -ed of the past tense			
little	little	little	In conversation, it is usually clear from the context that an event occurred in the past.
2. Not sounding contracted *is* and *are*			
little	little	little	Since the meaning of 'he running' or 'she my sister' is clear, the syntactic function of '(i)s' is not 'essential'.
3. *on* for *in* and *from* for *by*			
little	little	little	Lack of strong contrast in meaning, as well as idiomatic usage, increases the potential confusion here.
4. Omitting the weak forms of *a* and *the*			
little	little	some	Lack of strong contrast in meaning, as well as idiomatic useage, increases the potential confusion here.

Although there were a few examples of the *baby on the pram* variety, in most instances where *on* was substituted for *in* the misuse was in such contexts as these. It seemed, therefore, that these children were not, as is commonly supposed, using prepositions at random, with a strong preference for *on* when in doubt, but were not in fact aware of the subtle distinctions English speakers make. The use of *from* for *by (he got hurt from the glass)* has also been noted as a characteristic Polynesian variation, and attributed to interference from the Polynesian first language but there is another possibility: that the children were confused by the different uses and meanings of get in English:

> *he got* (= received) *a spanking from his mother*
> *he got* (= was) *spanked by his mother.*

Some of the New Zealand children were also uncertain for the same reason.

Item 4 (omitting the weak forms of *the* and *a*) also occurred among the New Zealand children:

why is he in truck?
looks like window's broken, etc.

Nevertheless, such examples occurred far more frequently among the Samoan children. This is hardly surprising since the definite and indefinite articles seem to involve the greatest semantic complexity of the lot.

It is worth remembering that the letter 's' when used to express grammatical relationships must surely be the source of many difficulties for children who are trying to make sense of what they hear. Not only does its sound vary between /s/ and /z/, but the variation is due to the sound which precedes it, and not to any grammatical distinction or function. It can be used with nouns or with verbs, and it can represent six different grammatical relationships:

(i) with nouns, to mark plural:
cats /s/
dogs /z/

(ii) with nouns, to mark possession:
cat's milk /s/
dog's bone /z/

(iii) with verbs to mark 3rd person, singular, present tense:
he makes (/s/), *grabs* (/z/), *goes* (/z/)

(iv) to represent *is* as a linking verb:
it's mine (/s/), *he's there* (/z/)

(v) to represent *is* as an auxiliary with *-ing* forms:
it's raining (/s/), *he's making* (/z/)

(vi) to represent *has* as an auxiliary with *-en* forms:
he's got one (/z/) *it's been done* (/s/)

The Two Year Gap

It appears from this study of New Zealand-born Samoan children, that there are very few distinctive differences between their spoken language and that of their New Zealand age mates. These few differences are likely to be caused by items which combine subtle distinctions of sound and of meaning, and are unstressed in normal, connected speech. The Samoan child who said, *Dey frowing bow'n' arrows in the wagon* (= They're firing arrows at the wagon) is merely combining in one sentence the variations which also appeared among the New Zealand children who attempted the same description.

If there are so few areas where the spoken language of New Zealand-born Samoan children differs from that of New Zealand children of average ability from middle-income homes, why do they lag behind? One reason is that although they make the same errors as their New Zealand agemates, they make more of them, and, as we commented earlier, their variations are more likely to be perceived as errors than as mistakes. Faced with the combination of unfamiliar pronunciation and more mistakes, the listener tends to give up.

Another possibility is that some of the errors will be noted only when the child is asked to read, write, or repeat sentences. He may have been saying *walk* for *walked* and *jump* for *jumped* for years, because this is what he hears, and it may have passed unnoticed in contexts where the past tense was clearly meant, and where the opportunities for individual conversation with English-speaking adults have been limited. Even when listening to the children on tape, I often found it necessary to replay several times in order to determine whether or not the *-ed* had been sounded. I have also noticed that the New Zealand child who uses playground forms in conversation will switch to the more formal versions required by tests. For example, a child who consistently used *my brother he* . . . and other forms typical of informal conversation did not do so when repeating sentences from the *Record of Oral Language*. Children learning English as a second language are not always aware that such switching is necessary.

Prospects for the Future

Linguistic experts such as Townsend and Brittan in Britain, and Kennedy in New Zealand are sure that dialect differences in themselves are not the cause of lack of success at secondary school, or of apparent lack of interest in university education. It would be a mistake to suppose that all immigrants are anxious to acquire status through educational qualifications, and thus to see their low representation at universities and teachers' colleges as a sign of 'failure'. Kennedy believes that 'linguistic change is more a result than an agent of social change', and so hope for the future can be seen in the figures from the 1976 Census: nearly 62% of 15- to 19- year-old Samoans resident in New Zealand were attending secondary and tertiary institutions, and no doubt we shall see increasing numbers of non-European New Zealanders with middle-class status, and 'accents' indistinguishable from those of their European peers. There are those who deplore such assimilation or acculturation, but if the alternative is that choices and opportunities will be restricted in order to preserve a culture, that choice should be left to the individual.

Notes

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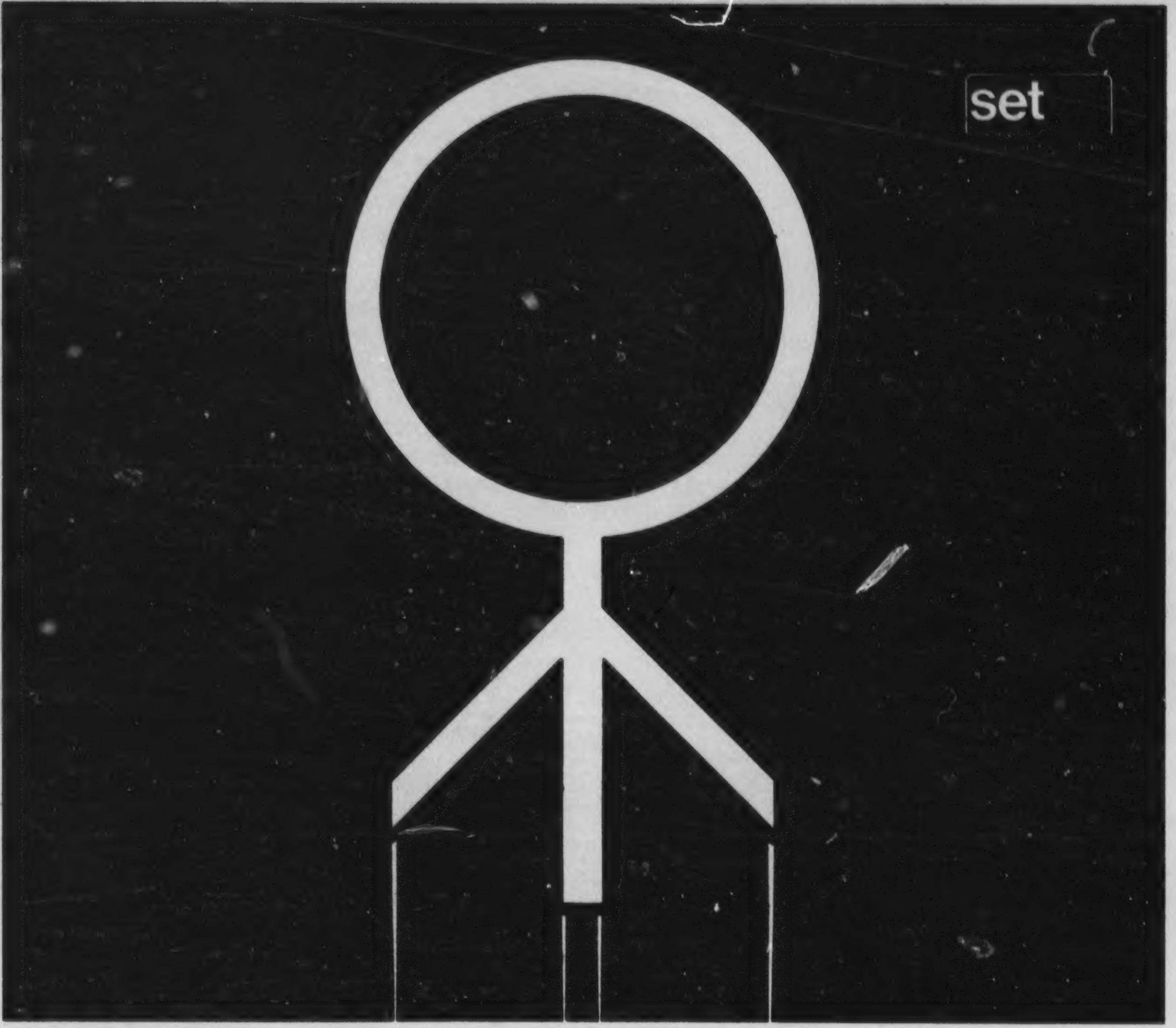


The Promotion of Women in the Teaching Service

Women are under-represented in senior positions in both the primary and the secondary teaching services. But why? Judy Whitcombe has been conducting a research project in the Department of Education's Research and Statistics Division, stimulated by the Education and the Equality of the Sexes Conference in 1975 and requested by the Committee on Women in Education formed during that year. The project has been designed in four phases:

1. Case study interviews with an equal number of men and women, primary and secondary, school teachers, 48 in all.
2. An analysis of where women are in the secondary teaching service.
3. An examination of primary grading statistics.
4. A questionnaire survey of a five per cent sample of New Zealand teachers.

In this *set* item, based on papers by Judy Whitcombe, the findings of the second part of the project are briefly summarised, and the results of the third part given in greater detail.

Women in Secondary Teaching

The analysis has revealed that:

1. Women have the best chance of promotion from an internal appointment in a school where they are known;
2. Women have a high success rate when they do apply for promotions — but not enough are applying;
3. The opening up of senior positions has proved detrimental to women — which is the reverse of what was intended;
4. Men are moving into PRs and senior administration positions in girls' schools.

Men teachers are clearly pursuing a more active policy of applying for promotions. Men have carefully planned their careers and have clear ideas as to their future appointments. They apply for promotions and positions accordingly. But the main reason for women teachers changing positions is family-related.

Men appear to be more aware of the promotions gained by teaching in single sex schools and this has resulted in a male takeover with men occupying high PR and senior positions in girls' schools and maintaining control of senior and PR positions in boys' schools.

Maths and science are drawing men into PR and HOD positions in girls' schools and women with degrees covering these areas could find swift promotion if they taught in girls' schools.

In 1978, 101 men held positions of responsibility from PR1 upwards, even to acting principal in girls' schools, but only six women held PRs in boys' schools and they were at the lowly PR1 and 2 level.

There are three male principals of state girls' schools. Co-ed schools are providing the most heartening picture of women gaining promotion. There are now two women principals of large schools and 19 women deputy principals. There has also been a sustained growth in the percentage of women at PR levels in these schools.

But the research shows that women are simply not applying for promotions in proportion to their numbers in the profession. For example, in 1978/79 only 18 per cent of all applicants at co-ed schools were women, yet they make up 37 per cent of all teachers there.

In girls schools only 60 per cent of applicants were women yet they were 81 per cent of the teachers. In boys' schools, women are five per cent of the applicants and six per cent of the staff.

But, while they are not applying in the same proportions as men, women are achieving a far greater success rate. Overall, 54.2 per cent of the women who apply for positions are successful, compared with 30.6 per cent of men.

On current trends, it will take until next century for the proportion of women occupying senior positions in the secondary service to equate with the proportion of women teachers.

Women in the Primary Teaching Service

Although women make up 63 per cent of the primary teaching force they hold only 5 per cent of the principalships, only 12 per cent of the deputy principalships, and only 53 per cent of the Senior Teachers are women. On the other hand they do predominate as Senior Teachers of Junior Classes (STJC) holding 85 per cent of these positions. These figures are given in more detail, Education Board by Education Board, in Table 1.

It has often been said that women are under-represented because they do not apply for senior positions. This was thought to be an over-simplification of a complex situation and an investigation of women's career patterns was begun by the Education Department. The purpose of the following analysis is to discover the answers to the linked questions:

1. Why aren't more women appointed to senior positions?
2. Do women apply for these?
3. Do women hold a sufficiently high assessment to make an application worthwhile?
4. Do women apply for assessment?

In primary teaching, appointments to senior positions (in B and C Divisions) are made on the basis of the Personal Assessment Report. The higher the assessment held the greater the probability of appointment to the position sought.

Statistical material for this investigation was gathered in 1979. Assessment records held by District Senior Inspectors were examined at the 10 Education Board offices in New Zealand and applications for assessment and grades received were totalled for men and women. (This proved a time-consuming exercise on occasions for there is no standard form of recording the information and there were wide variations among boards.) In addition Board Staffing Officers were requested to record for 1979 the number of applicants for each level of position, their sex, and the assessment held, where applicable. This information had not previously been available and had to be specially recorded. Thanks are due to all Education

Table 1. *Distribution of Women Teachers in Education Board Districts — March 1979.*

Board	Principals		DPs		STJC		Senior Teachers		Teachers		Year 1		All Teachers	Total Teachers
	Women No.	%	Women No.	%	Women No.	%	Women No.	%	Women No.	%	Women No.	%	Women %	
Auckland	22	4.9	50	16.4	219	90.1	408	56.1	2365	80.0	447	79.5	67.0	5243
South Auckland	14	3.7	9	5.4	125	83.9	173	52.3	1423	78.4	272	83.4	63.7	3165
Taranaki	8	7.3	2	6.3	30	93.8	30	50.0	249	75.9	37	78.7	58.6	608
Hawke's Bay	8	4.1	7	9.7	55	83.3	59	46.8	486	72.5	84	75.0	56.4	1239
Wanganui	5	3.2	6	10.5	43	78.2	47	45.2	417	79.7	59	77.6	59.5	969
Wellington	26	10.5	30	19.6	135	94.4	194	63.6	1066	80.2	243	81.3	68.3	2479
Nelson	3	5.0	2	8.7	15	62.5	20	41.7	133	63.9	26	68.4	49.6	401
Canterbury	10	3.4	8	6.2	88	79.3	110	47.6	987	76.6	180	75.3	60.3	2295
Otago	4	2.5	7	13.2	44	75.9	42	40.4	459	79.3	90	75.0	60.2	1073
Southland	1	.9	5	12.5	35	83.3	22	50.0	241	77.0	46	70.8	56.5	620
														18092
Total Women	101		126		789		1105		7826		1484			11431
% Women		4.7		12.2		85.4		53.1		78.2		78.8	63.2	

Table 2. ***Applications for Division B Reports.***

How the Education Boards received applications for grading in 1979.

	Women as a % of all applicants	Women as a % of all teachers
Auckland	62.0	67.0
South Auckland	54.6	63.7
Taranaki	47.6	58.6
Hawke's Bay	50.4	56.4
Wanganui	51.0	59.5
Wellington	62.9	68.3
Nelson	46.2	49.6
Canterbury	53.7	60.3
Otago	42.5	60.2
Southland	47.7	56.5

Table 3. ***Applications for Division C Reports.***

How the Education Boards received applications for grading in 1979.

	Women as a % of all applicants	Women as a % of all teachers B1 and upwards
Auckland	32.6	40.6
South Auckland	1[illegible].9	31.3
Taranaki	23.5	30.0
Hawke's Bay	25.5	27.3
Wanganui	20.5	28.2
Wellington	35.1	45.3
Nelson	–	25.8
Canterbury	10.3	28.2
Otago	10.3	25.9
Southland	10.0	26.0

Table 4. ***Division B Reports 1975 to 1979.***

How the Education Boards give grading marks: Men and Women compared.

Grading Mark	1		2		3		4		5		6		7		Total		Average Grading Mark	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
Auckland																		
Actual number graded	107	73	334	115	351	175	280	198	139	133	113	153	45	52	1369	899	3.4	4.0
% getting this grade	8	8	24	13	26	20	21	22	10	15	8	17	3	6	100	100		
South Auckland																		
Actual number graded	72	48	162	81	205	133	142	141	80	114	52	124	17	61	730	702	3.3	4.2
% getting this grade	10	7	22	12	28	19	20	20	11	16	7	18	2	9	100	100		
Taranaki																		
Actual number graded	16	8	36	17	38	32	24	42	15	32	12	25	4	15	145	171	3.2	4.2
% getting this grade	11	5	25	10	26	19	17	24	10	19	8	14	3	9	100	100		
Hawke's Bay																		
Actual number graded	27	22	68	43	69	69	67	64	37	58	25	54	11	29	304	339	3.5	4.1
% getting this grade	9	7	22	13	23	20	22	19	12	17	8	16	4	9	100	100		
Wanganui																		
Actual number graded	27	17	65	33	73	49	52	69	12	52	7	53	5	25	241	298	3.0	4.2
% getting this grade	11	6	27	11	30	16	22	23	5	17	3	18	2	8	100	100		
Wellington																		
Actual number graded	55	39	172	49	188	84	153	95	65	47	52	83	24	37	709	434	3.4	4.1
% getting this grade	8	9	24	11	2[illegible]	19	22	22	9	11	7	19	3	9	100	100		
Nelson																		
Actual number graded	10	7	29	12	20	31	16	32	15	15	2	27	2	9	94	133	3.1	4.2
% getting this grade	11	5	31	9	21	23	17	24	16	11	2	20	2	7	100	100		
Canterbury																		
Actual number graded	70	39	176	77	163	155	148	159	70	93	50	103	16	54	693	680	3.3	4.1
% getting this grade	10	6	25	11	24	23	21	23	10	14	7	15	2	8	100	100		
Otago																		
Actual number graded	18	20	57	32	72	43	46	53	21	37	14	40	5	19	233	244	3.2	4.0
% getting this grade	8	8	24	13	31	18	20	22	9	15	6	16	2	8	100	100		
Southland																		
Actual number graded	17	11	31	30	36	48	22	45	13	33	4	35	4	14	127	216	3.1	4.0
% getting this grade	13	5	24	14	28	22	17	21	10	15	3	16	3	6	100	100		

Boards for their co-operation in providing the returns

The requirements for eligibility for assessment are outlined each year in the Education Gazette so that all teachers have access to the necessary information.

1. A teacher may apply in his or her 5th year for a Division B report.
2. Teachers with 13 years service, at least three in Division B, may apply for a Division C report.
3. Division D positions do not require assessment reports.

The assessment procedure is generally known as 'grading'.

Table 5. *Division C Reports 1975 to 1979.*

How the Education Boards give grading marks: Men and Women compared.

Grading Mark	1		2		3		4		5		Total		Average Grading Mark	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M
Auckland														
Actual number graded	36	87	73	135	76	177	42	130	4	78	231	607	2.6	3.0
% getting this grade	16	14	32	22	33	29	18	21	2	13	100	100		
South Auckland														
Actual number graded	18	56	36	98	28	132	16	102	7	44	105	432	2.6	3.0
% getting this grade	17	13	34	23	27	31	15	24	7	10	100	100		
Taranaki														
Actual number graded	3	14	11	23	5	32	5	26	1	12	25	107	2.6	3.0
% getting this grade	12	13	44	21	20	30	20	24	4	11	100	100		
Hawke's Bay														
Actual number graded	10	25	21	47	21	61	6	45	–	25	58	203	2.4	3.0
% getting this grade	17	12	36	23	36	30	10	22	–	12	100	100		
Wanganui														
Actual number graded	13	21	12	46	10	59	8	39	2	20	45	185	2.4	3.0
% getting this grade	29	11	27	25	22	32	18	21	4	11	100	100		
Wellington														
Actual number graded	28	36	44	65	43	87	12	72	2	44	129	304	2.3	3.1
% getting this grade	22	12	34	21	33	29	9	24	2	14	100	100		
Nelson														
Actual number graded	2	10	3	14	3	19	2	12	–	9	10	64	2.5	2.9
% getting this grade	20	16	30	22	30	30	20	19	–	14	100	100		
Canterbury														
Actual number graded	26	59	44	100	30	142	16	100	8	51	124	452	2.5	3.0
% getting this grade	21	13	35	22	24	31	13	22	7	11	100	100		
Otago														
Actual number graded	7	16	11	36	6	47	4	36	–	21	28	156	2.3	3.1
% getting this grade	25	10	39	23	21	30	14	23	–	13	100	100		
Southland														
Actual number graded	5	20	4	38	9	39	4	33	–	18	22	148	2.6	2.9
% getting this grade	23	14	18	26	41	26	18	22	–	12	100	100		

Applications for Assessment

The percentage of women applying for grading has been calculated (see Tables 2 and 3). It is not possible to calculate the number of teachers entitled to apply for grading but not applying.

It is important to note that ceilings operate in the assessment system. An applicant applying for a Division B report in the minimum qualifying time is limited to a ceiling assessment of 4 (on a 1–7 scale) while a minimum qualifying time applicant for a Division C report has a ceiling of 3 (on a 1–5 scale). Those qualifying in the minimum time (that is, those teachers who have a ceiling operating) were not separated in the statistics for two reasons. First, both sexes are equally affected by ceilings and, second, the information was difficult to obtain.

Women are applying for grading and in sufficient numbers and proportions to refute the often heard assertion, 'Women don't apply for grading'.

Overall there is a slight increase in the proportion of women applying from 1975 to 1979. Some fluctuations not shown by the tables here are hard to explain. For example, a hugh increase in Otago women applying for 'B' reports in 1978 was referred to the Inspectorate for comment but no significant event or in-service course could be linked to the upsurge, which was not maintained in subsequent years. Canterbury also showed an increase for 1978 'B' reports but in some other areas this year produced a decline. The number of women applying in Wellington has dropped since a 1975 peak.

Wellington still has the highest proportion of women applying in both B and C Divisions. This may be related to the fact that the highest proportion of women teachers are in that Board area. Auckland comes second in both divisions. Nelson Board with the lowest proportion of women teachers has among the lowest proportion of women applicants in both B and C divisions. Southland has a very low application rate for both B and C reports but the numbers of women seeking B reports have more than doubled over the period. Otago also has a low proportion of women applying for assessment.

The percentage of women applicants in Division B shows that women are taking the first step (Table 2). Division C has a lower proportion of applicants but then the pool of women with sufficient service entitled to apply for C reports is proportionately lower too (Table 3). It is not possible to see whether the increasing number of women applying for B reports is reflected in Division C as there is a further 7 year service requirement after first application for a Division B report and statistics collection over a longer period would be required before trends could be assessed.

When the percentage of women applicants over the period is studied it is clear that women are applying for assessment and in proportions great enough to ensure that they could move into senior positions providing their assessment grade was sufficiently high.

Assessments Received

The next step in the investigation was to compare the assessment received by men and women teachers. Tables 4 and 5 show the allocation of grades for B and C divisions. The average for women over the 5 year period is always lower than that for men.

Differences between Board areas was slight overall, but this is to be expected. The allocation of assessment is expected to conform to the normal distribution curve. A meeting of a national assessment group (usually held in May) reviews the applicants for assessment from all Boards and sets distribution quotas for each Board area. District Boards of Inspectors subsequently meet, in September or October of each year, to distribute the assessments within the prescribed allocation. The regulations state that, 'The Director-General shall take steps as he considers necessary to maintain reasonably uniform standards of assessment among the various District Boards of Inspectors'. A system of inter-district cross-checking is carried out by inspectors to ensure consistency.

There are annual fluctuations within Board areas not shown in these tables. For example, women in Hawke's Bay had a very successful year in 1977 in Division B with the mean for women exceeding the male mean, and men and women had equal means in Auckland in 1976. Apart from these two examples women are always lower in Division B although they make up approximately half of those assessed.

In Division C the smaller number of teachers being assessed results in greater fluctuations. In some years the female mean has exceeded the male mean; e.g., in 1975 in Taranaki and Southland, in 1976 in Nelson (where 1 woman received a 4), in 1977 in Southland (only 3 women applicants), and 1978 in South Auckland. The very low number of women applicants in these areas has contributed to the occasional higher average scores which run against the general trend.

It is accepted that women will predominate among the first-timers in Division B anyway. To correct for 'first-timers' a further analysis was carried out and again the proportion of women is far below that of men.

A Division B report assesses seven aspects of the teacher's work: personal, professional qualities; relationships with children; planning preparation and records; class or school atmosphere and management; content and quality of the class or school programme in action; methods of teaching; capacity to conduct a small school or carry out the duties of a senior teacher in a large school. These apply equally to men and women teachers so it is theoretically possible for both sexes to score equally well. However, some inspectors have stated that they place emphasis on point 7 — which deals with organisation and administrative performance — which gives men a greater chance since more men have had these experiences. In Division C six areas are focussed on and three of these are concerned with organisation and management. As many more men hold positions (e.g., Principal or Deputy Principal), where they are demonstrating their capacity in these areas, so they are more likely to score better than women. Thus women, unless they hold high administrative positions, are unlikely to receive comparable grades to men in Division C.

The allocation of assessment is a key area in the search for reasons why more women are not in senior positions. This analysis has shown that women continue to receive lower assessments than men and there was little sign of any change in the pattern over the years.

Research by J. Ussher on year 1 and 2 teachers in New Zealand has shown that women teachers consistently demonstrate a better teaching performance than men and a teachers' college report shows that in the second year of teaching men teachers seemed to have a reduced level of competency.

It would appear then that women start off well as teachers yet by the time they are graded their performance is judged to have fallen. However, assessment is not just a measure of teaching ability and so it must be presumed that women are seen by inspectors as showing less leadership potential if their consistently lower assessment grades are to be explained, certainly at B report level.

This analysis cannot answer the question 'In what aspects are women achieving lower than men?' but it does show that the assessment process is not favourable to women. The effect of receiving lower assessments is that women are, generally, at a disadvantage when applying for positions.

Applications for Senior Positions

Education Boards were asked to record, for 1979, the number of applicants for each senior position by sex and assessment held. Returns were sent in at the end of each term.

The 1979 totals of applicants for B1 positions upwards are shown in Table 6.

Table 6. *Number of Applicants for Senior Primary Positions, 1979.*

	Women	Men	% Women
B1 (all NZ except Auckland)	362	522	
B2 (all NZ except Auckland)	617	1952	
B3 (all NZ except Auckland)	184	671	
B4 (all NZ except Auckland)	35	1088	
All B Positions (including Auckland)	2043	6078	25.16
C1 (all NZ except Auckland)	40	613	
C2 (all NZ except Auckland)	56	1273	
C3 (all NZ except Auckland)	17	333	
All C Positions (including Auckland)	281	3404	7.63
D1 (all NZ except Auckland)	30	204	
D2 (all NZ except Auckland)	6	172	
All D Positions (including Auckland)	47	497	8.64
All Senior Positions	2371	9979	19.2

Once again regional differences occurred with the greatest proportion of women applicants for B positions coming from Wellington and Auckland Board areas. Auckland has the highest proportion of women applicants for C positions while Taranaki and Southland did not have any women applying for these positions. Very few D positions were advertised.

Boards were also asked to record the assessment held by the applicants. These figures reflect exactly the same pattern as in Tables 4 and 5 with the women's average below men's.

The analysis of applicants for senior positions upholds the often expressed view that women are under-represented in senior positions because they don't apply. The proportion of women applicants was indeed low (only 19 per cent overall). Assessment could be one explanatory factor in this situation for any teacher who applies for a senior position with a low assessment has little chance of success, certainly in the closely sought after schools in urban areas. Other factors which influence women to apply or not apply for senior positions are to be investigated in the questionnaire survey.

Conclusion

The investigation has revealed that:

1. Women are applying for assessment (at B report level) in proportions close to the proportion of men teachers.
2. The assessments received by women are consistently lower than that allocated to men.
3. The number of women applying for senior positions is lower than the number who are able to do so.

The key question to be answered is, therefore, 'Why do women receive lower assessment grades than men?' If the assessment procedure is to treat both sexes equally, teachers need to be fully aware of what is assessed when inspection occurs. Inspection is carried out by one of a team of inspectors. (At the time of writing the Inspectorate comprised 92 men and 4 women.) The present guide *The Appointment and Promotion of Primary School Teachers in New Zealand* was published in 1975. In states that 'Inspectors are responsible for making their judgements throughout the whole range of agreed criteria' (page 32). If more emphasis is placed on certain criteria this should be indicated officially so that teachers (particularly women) who do aspire to leadership positions can pay attention to these aspects. The assessment of teaching ability is only part of the personal assessment, 'the primary function of the personal report is to give appointments committees a full and fair picture of a teacher's professional abilities, and his relative claims for appointment to a particular position as a senior teacher'. (*Appointment and Promotion of Primary School Teachers in New Zealand*, page 11.)

A further question requiring answer is, 'Why don't more women apply for senior positions?' Low assessments is one important consideration. It is reasonable to assume that while they continue to receive lower assessment women will not apply for senior positions in any great numbers.

The outcomes of the present system of assessment would seem to indicate that 'the relative claims for appointment' are stronger for men teachers than for women. If women, who are 65 per cent of the primary teaching force, are to fare better under the present system (or its possible replacement) the assessment procedure will need a closer investigation.

Notes

The analysis in this survey was unable to compare men and women by age and length of service. But these and many other factors are being investigated in the fourth part of the project — the questionnaire survey of a five per cent sample of all New Zealand teachers. The results will be published by the Department of Education, probably in 1981.

Bibliography

The two pieces of research which show women as teaching better than men can be found in:

Ussher, J. *The Occupational Socialisation of the Beginning Teacher in New Zealand: Administrative Implications*. Master of Educational Administration, University of New England, New South Wales, 1977.

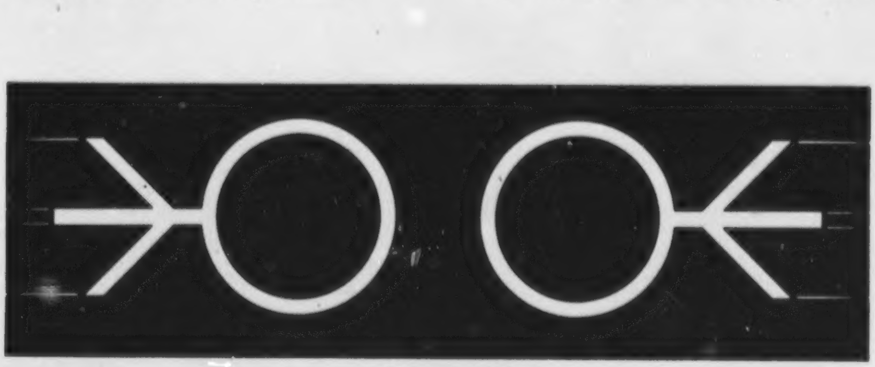
Wellington Teachers' College. *Evaluation in a Teachers' College: a Report of the Year One and Year Two Teacher Study*. Wellington, Wellington Teachers' College, 1976.

The *Teacher Career and Promotion Study* papers, on which this item has been based, are:

Whitcombe, J. *The Present Position of Women in Secondary Teaching*. A paper to the Women's Studies Association Conference, August 1979. (Available from the author or the Department of Education.)

Whitcombe, J. *A Comparison of Career Patterns of Men and Women Teachers*. A paper presented to the New Zealand Association for Educational Research Conference, December 1979. (Available from the author and the Department of Education.)

Whitcombe, J. *The Promotion of Women in the Primary Teaching Service*. Wellington, Department of Education, 1980. (Available from the Department of Education.)



*Item 7

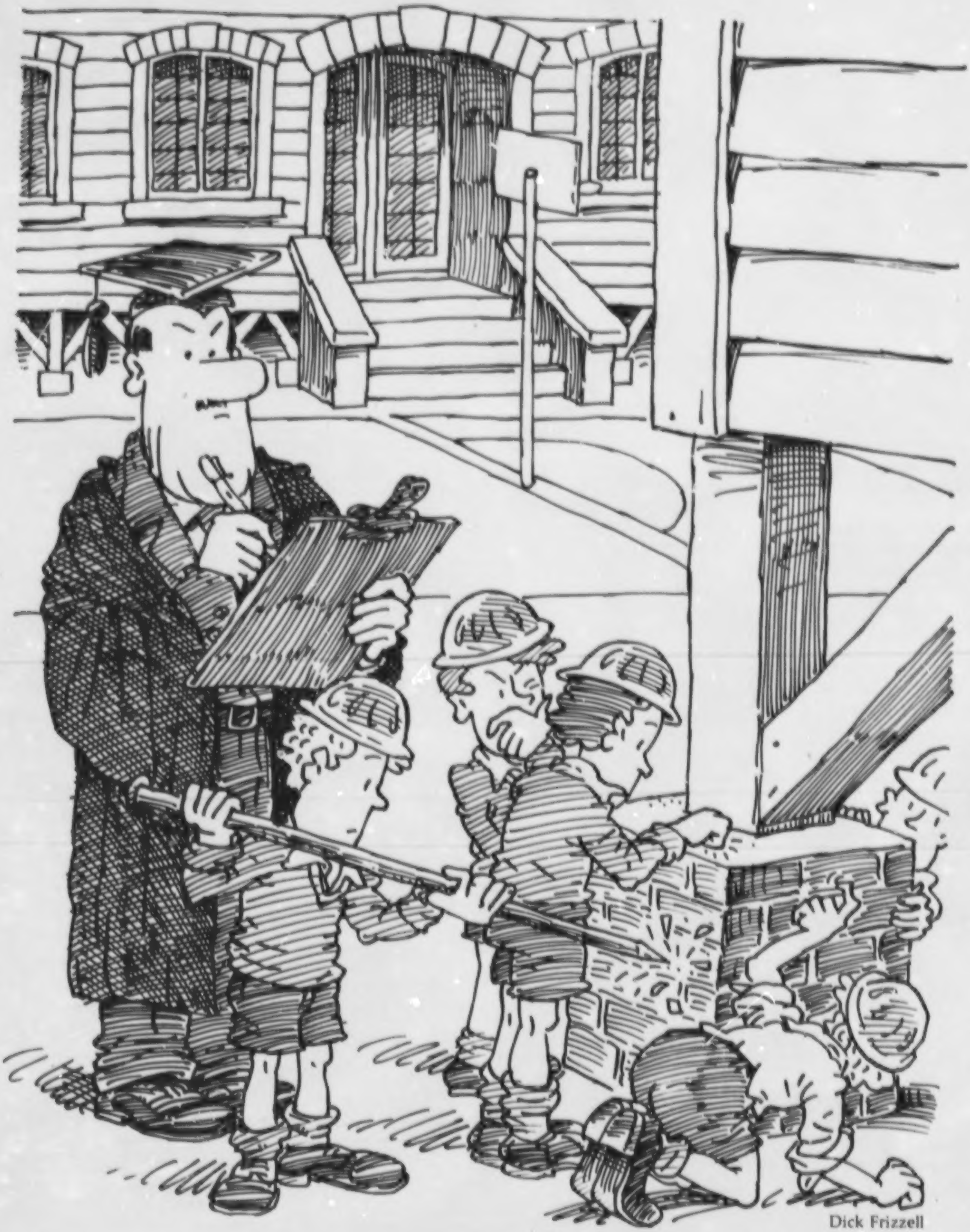
Maughan, B.; Ouston J. "Fifteen Thousand Hours: Findings and Implications." Trends in Education, v4, 1979. pp 18-23.

*Because of copyright restrictions, the publishers removed this article before sending Set Number Two to ERIC.

Item 8

The Foundations of School Testing

set research information for teachers
number two 1980



Dick Frizzell

The Foundations of School Testing

For teachers specialising in assessment techniques, and students anxious to sort out the theory and practice of testing in schools.

By Cedric Croft
NZCER

An understanding of validity, reliability and usability are a must for all test users. The *validity* of a test is an indication of how well it measures what the author claims it will measure; its *reliability* describes the consistency or dependability of its scores; and its *usability* is concerned with its administration, format, interpretation and supply.

An alarm clock that keeps accurate time can be described as being *reliable,* and if the alarm goes off at the right hour the clock is functioning *validly.* If the dial of the clock can be read with little chance of misinterpretation, the alarm control operated readily, and it is robust and easily rewound, the clock could be described as being highly *usable.* If it stops, however, and I fail to reset the hands on winding it up, it is still a reliable clock in that it continues to keep consistent time, but the alarm will not function validly since the time shown on the clock does not conform to standard time. The clock could still be usable, but the ease with which it can be used has been affected by the lack of validity.

Tests also can be highly reliable but not valid for a particular purpose. A diagnostic test of long division for example, can give very reliable results, but it would not be the most valid test to select pupils for an enrichment programme in all branches of mathematics. Test validity is heavily influenced by reliability — the alarm will go at the wrong time if the clock runs slow — but high degrees of validity and reliability alone do not necessarily guarantee usability — think of an accurate but faceless alarm clock. The usability of a test will also suffer if reliability or validity are impaired, for example, if the group the test is to be used on differs substantially from the group the test was developed for.

1. Test Validities

When we have given a test, and have the scores, what may we infer from those test scores? What have we measured? What can the scores tell us? What may we not infer? These are questions about the test's validity. Note that validity is inferred, not measured directly. Evidence of validity is usually presented in a test manual, but validity cannot be regarded as a universal and everlasting feature of a test: it is a quality we must judge; and it may be adequate, marginal, or unsatisfactory for this group, at this time, for this specific purpose.

Up to ten types of validity can be identified but the following four are most relevant to classroom testing; content validity, concurrent validity, predictive validity and construct validity.

(i) Content Validity

You have content validity when the test measures a representative sample of the relevant knowledge skills and behaviour. If fractions are emphasised in your teaching, does the test emphasise them too? If urban drift is not covered in your teaching will its inclusion in an achievement test be legitimate? If drawing inferences was your main thrust in science, how many of the test questions could be answered by recall? Evidence of content validity is crucial when we wish to generalise from an individual's performance on a test to the knowledge and skills the test sampled.

Content validity is of the utmost importance for all classroom tests, and also relevant to behaviour checklists, measures of scholastic aptitude, tests of special abilities, and personality inventories.

For a test to have content validity the test items must measure the behaviour they purport to sample. Descriptions of the course or subject matter, the test objectives, and the nature of the sampling, are critical. Although some objective procedures can be used to help assess content validity, the final judgment must remain the opinion of the test's user and the process will always be largely subjective.

It is always possible that a test regarded as having content validity for one school, could be invalid for another school. This would be the case when these schools had differing objectives, or had chosen different content or had different emphases. A test of reading achievement containing a section on skim reading would be valid for a school that taught the techniques of skimming, for example, but invalid in a school that did not have the development of skim reading skills as one of its objectives. For an achievement test, content validity will exist when there is close agreement between the school's objectives and teaching practices, and the test's coverage. The focus of content validity is firmly on the adequacy of the sampling of course-content, and not just on the appearance of the test. Although a test should look as though it will measure what is claimed, this 'face validity' is not sufficient. Establishing content validity must be a prime consideration for everyone constructing an educational test or examination. But how can it be done? As the first step, draw up a table of specifications showing the weighting and emphasis that will be given to the various aspects of subject-matter and cognitive process. For an example, see table 1.

The essential question to ask is: 'To what extent does the content of this test reflect the knowledge and skills I have tried to develop in these pupils?'

(ii) Concurrent Validity

Concurrent validity is an estimate of the relationship that exists between scores on a test, and some other acceptable criterion. For example, the performance of children on New Zealand's *PAT: Reading Comprehension* might be compared with their performance on the Australian *ACER Paragraph*

Table 1 3B BIOLOGY
TERM 3 Ms BELLMAN

Course Content	**Cognitive Process**				
	Knowledge	**Comprehension**	**Application**	**Analysis**	**Total Items**
1. Methods of Science: Testing Hypotheses	4	2	2	2	10
2. Animal Classification	2	4	4	–	10
3. The Plants of the Earth	4	4	2	–	10
4. Populations and Mechanics of Evolution	2	3	2	3	10
5. Evolution, Genetics and the Races of Man	–	3	4	3	10
Total Items	12	16	14	8	50

Reading Test. A high correlation (0.85+) would suggest that these tests are measuring substantially the same skills, so consequently, their concurrent validity is high. Note that this does not shed any light on the nature of the skills being tested. Furthermore, all a low correlation tells us, is that the skills and abilities being sampled by each test differ.

If performance on a test of library skills, for example, was correlated with 'ability to use a library', it might be possible to make a statement about the way in which the test performance relates to 'real life'. However, 'real life' is a difficult thing to measure objectively, and a low co-efficient may just mean that the test is not being compared with a *suitable* criterion.

Essentially, concurrent validity provides confirming evidence of a test's validity — 'validity by association' — the test in question must be valid if it relates well to another that is already regarded as valid. There may be a tendency to overvalue the importance of concurrent validity data because it is numerical, but in reality, concurrent validity provides us with the least information about what a test is actually measuring.

(iii) Predictive Validity

Predictive validity is a measure of the relationship between test scores and some appropriate performance at a later date. In New Zealand it would be possible to investigate the relationship between performance on *PAT: Reading Vocabulary* at Form I, and the marks gained in School Certificate English four years later.

Predictive validity is most crucial for selection and training where a test is being used to forecast likely success in a training programme. In the classroom context, tests of reading readiness or learning disability are examples of tests that must have their predictive validity established.

By and large, teachers need not be concerned about the predictive qualities of standardized achievement tests used in classrooms, since their main concern is with here-and-now performance.

(iv) Construct Validity

Construct validity concerns psychological traits or qualities and attempts to describe the underlying psychological processes that are used in a specific test situation. A psychologist's 'constructs' are similar in nature to a physicist's 'models': both are theoretical notions that are developed to help explain and organise aspects of existing knowledge. Terms such as 'reading readiness', 'anxiety', 'scholastic aptitude, 'critical thinking' and 'reading comprehension' are examples of constructs. The basic question in construct validity is not, 'Does this text measure what the author claims it measures?' but, 'What exactly does this test measure?' The identification of all factors influencing the test score is the aim of construct validation.

Despite the crucial importance of this quality, least progress has been made in establishing sound evidence for the construct validity of most psychological and educational tests. There is no satisfactory single technique for assessing construct validity, nor can it be firmly established by any one study. The methods used to obtain evidence of construct validity include (i) logical analysis of the mental processes used to answer test items (ii) studies of group differences (iii) studies of changes in performance over time, particularly when treatments differ (iv) correlations with other tests (v) intercorrelation of items within the test.

A Final Word on Validity

It is worth stressing at this point that all types of validity are inter-dependent: they provide information on how well the test measures a defined field (content), how it compares with other valid measures of a similar type (concurrent), and how well it predicts future performance (predictive); and all this information may be used when considering the test's construct validity. It is also worth reiterating that a test is not valid or invalid per se: it depends on the use to which it is put.

2. Reliabilities

To be valid a test must be reliable. In fact, test reliability has a ceiling effect on test validity: unless a test measures with some consistency it is not possible to be sure what the test is measuring. The reliability of a test is most often expressed as the correlation between one set of scores (on a test for a specified group) and another set of scores (on an equivalent test for the same group). This correlation, usually called the reliability coefficient, ranges from 0 to 1, which corresponds to a scale from complete unreliability, i.e., a random fluctuation of scores, to complete reliability, i.e., perfect consistency of scores.

Although reliability coefficients of 0.96 or higher are reported occasionally, test constructors are satisfied if they can achieve reliability in the vicinity of 0.90. It is tempting to interpret reliability coefficients as the percentage of scores that are in complete agreement, but this is not correct. However, we can use percentages to illustrate the relationship between reliability levels and fluctuations in test score. Suppose we divide a class we have tested into two halves on the basis of their scores; then we re-test. How many children will remain in the same half following the re-test? If the test has a reliability coefficient of 1.00 all of them, 100%, will still be in the same half; if the reliability coefficient is 0.96 then 95% will stay in the same half and 5% will have moved from one half to the other; and so on.

Table 2 Interpreting Reliability Coefficients in Terms of Percent of Agreement

Correlation Coefficient	Percent of Agreement by Halves
1.00	100
0.96	95
0.90	90
0.85	87
0.81	85
0.76	83
0.64	80
0.49	74
0.25	66
0.00	50

from Robert L. Ebel, *Essentials of Educational Measurement*, N.Y. Prentice Hall, 1972.

The reliability coefficient gives an indication of whether the test is highly consistent, fairly consistent, or very inconsistent only. However, it is used to determine the 'standard error of measurement', of which more later.

The four major types of reliability that are most relevant to school achievement and aptitude testing are calculated by test-retest, parallel forms, split-half and Kuder-Richardson methods.

(i) Test-Retest

Test-retest reliability is estimated after a test has been given to a group on two separate occasions. The set of scores obtained for each individual on the first administration of the test is correlated with the set of scores obtained on the second administration. This gives us a 'test-retest reliability coefficient'.

What pupils do between the two tests can be crucial. If, for example, they learn things related to the test there can be marked changes in the scores. As a result the test-retest reliability coefficient may be artificially deflated. In addition, doing the test again may not seem a very useful activity from the students' point of view, so the second test may be a much poorer measure than the first. For reasons such as this, studies of test-retest reliability must be carefully controlled if a valid estimate of the test's *stability* over time is to be gained.

(ii) Parallel Forms

In some tests, for example, TOSCA in New Zealand and OTIS Higher in Australia, there are parallel forms of the test, which make it possible to measure the same skills on different test material. Usually a single group does both forms of the test, on consecutive days. Parallel forms reliability is really a measure of the *equivalence* of two forms of a test.

(iii) Split-Half

The practical difficulties associated with test-retest and parallel-forms stimulated the development of alternatives. One of these was to split a test into two reasonably equivalent halves, usually on the basis of odd and even items, so that each subject has a score on the odd items, and another on the even items. The correlation between the scores on the odd and even-numbered items is then calcuated. The split-half technique results in a coefficient of internal consistency that is, in essence, a measure of the homogeneity of the skills that are being tested.

(iv) Kuder-Richardson

Kuder and Richardson developed alternative approaches. Their formula, KR20, which has become widely accepted as a basis for estimating test reliability, requires information on the difficulty (proportion of correct responses) of each item in the test, and on the spread of scores. As the calculation of item difficulties can be a time consuming process, an estimate of a test's reliability can be obtained from Kuder-Richardson formula 21, which is based on the number of items in the test, the mean score and the standard deviation of scores. This 'short cut' approach always gives an under-estimate of the reliability coefficient when the items vary in difficulty, as they nearly always do.

Reliability and Errors of Measurement

A very practical way of thinking about reliability is to consider the extent to which an individual's score may vary from time to time. Every test score is made up of two parts: a 'true score', and an 'error score'. Error scores — which can raise or lower an individual's true score — can come from the test itself, from characteristics of the individual, or from features of the test administration.

If changes in test scores are not large between successive testings, the effects of these 'error variables' have been minimal, and the test is reliable. If a child's score changed from something around the 67th percentile to something around the 33rd percentile for example, over a period of a month or so, and there appeared to be no good reason for the change, the reliability of the assessment would be very much in doubt.

The extent to which an individual's score is likely to differ from the 'true' score, can be calculated and expressed as a 'standard error of measurement'. The standard error of measurement gives us an indication of the absolute accuracy of the test scores and generally speaking the smaller the standard error of measurement, the more reliable the test is. The *Ravens Standard Progressive Matrices* is said to have a standard error of measurement of 3. This suggests that for about 68 percent of cases the errors of measurement will be 3 points or less, but for the remaining 32 percent they will be greater than 3.

The standard error of measurement lets us interpret test scores as a band, rather than a single score. In 68 percent of cases an individual's true score will be + or – one standard error of the raw score. If you score 30 on *Ravens*, there are 68 chances in 100 that your true score lies between 33 and 27. If the band of scores is broadened to encompass two standard errors, i.e. 24–36, there are 96 chances in 100 that the true score falls within this range. Although it may look as though some precision has been lost, the use of bands of scores increases the chances of reliable measurement.

3. Usability

A test must be suitable for the purposes required, and there are practical questions that must be asked.

(i) Is the test readily available? No matter how valid and reliable a test might be in a particular situation, it will be of little use if you cannot get it. Even good tests date after a time, and they do go out of print. Some tests remain research instruments, and despite sound characteristics may never be published for widespread use. Tests that are published overseas can take up to 20 weeks to arrive in Australia and New Zealand, so supply can be an important factor unless long-term planning is carried out diligently.

(ii) Am I able to administer the test?
Tests vary in their complexity, and hence there are a wide range of practical and theoretical training requirements. There are two questions: 1. 'Do I have the background skills necessary for the competent administration of this test?' 2. 'Am I allowed to administer this test?' In New Zealand NZCER administers a test user qualification scheme. In Australia ACER administers a similar scheme. Certain classes of tests are available only to users who possess recognised minimum qualifications. The test catalogues available from NZCER and ACER list the qualifications and the restricted tests.

(iii) Can I interpret the results?
Test results can be reported in a variety of ways: age percentile ranks, class percentile ranks, deciles, stanines, z-scores, T-scores, deviation, IQs, and so on. You need to be familiar with the properties of the transformed scores to interpret the score. It is also necessary to know what behaviour is being sampled, so that how the test items reflect the abilities or aptitudes being tested can be seen. Good test manuals help.

(iv) How much time will it take?
First, time will be spent on giving the test. Then time must be spent on marking and interpretation. And have you got time to do something about what the test may reveal? Is the ultimate usefulness of the test scores worth the time it will take to get them? For example, the *Doren Diagnostic Reading Test of Word Recognition Skills* is made up of 11 subtests each with at least two sections, and takes three hours to administer. With time for scoring and interpretation to be added, there would need to be very real advantages for the teacher and pupil to justify the time involved.

(v) What will the total cost be?
This also must be weighed against the ultimate usefulness of the information gained. Take the probable effective life of the programme into account, as the setting up costs are relatively high, but costs decrease with subsequent use because most of the components are re-usable.

(vi) From what group were the norms derived?
Much of the value in a standardised test comes from being able to compare an individual's score with those of a representative sample of peers. To be of most value, the norms on a test should be derived from the same population as those taking the test. If this is not the case a judgment must be made whether valid comparisons can be made between those taking the test, and the norms sample. Little purpose would be served in administering a test of mechanical comprehension to third-form technical students if the norms for the test had been derived from the performance of university engineering students.

One result is that teachers and other test users are forced to use unadapted overseas norms when interpreting the performance of New Zealanders and Australians. This is a far from ideal situation, which gives rise to test information that is neither valid nor reliable. The widely used *Burt (Rearranged) Word Reading Test,* and its successor the *Burt Word Reading Test (1974 Revision)* can be used to illustrate this point. The *Burt (Rearranged) Word Reading Test* was normed on a sample of Scottish children in 1955, the arrangement of words in the test and the procedures for computing the so-called 'reading age' being adjusted to reflect the word reading skills of Scottish children. This test has been used in its original form in New Zealand, on the assumption that there is no difference between the performance of New Zealand and Scottish children on the test!

A revision of the 1955 version of this test was published in 1974. The Scottish figures show that children now have to read more words correctly to get the same 'reading age'. For example, on the 1955 formula 30 words read correctly gave a 'reading age' of 8.0 years, but in the 1974 revision, 30 words read correctly result in a reading age of 6.7 years. To be credited with a 'reading age' of 8.0 years, 48 words now need to be read correctly. The *Burt Word Reading Test (1974) Revision* is now being widely used and the assumption is that these new Scottish norms validly represent the performance of New Zealand children on this test, which seems unlikely.

The New Zealand test user is not well supplied with tests which present current New Zealand norms. Apart from the *Progressive Achievement Tests,* locally normed tests which have direct application in schools are restricted to the *Otis Tests of Mental Ability*, the *ACER Silent Reading Tests*, the *ACER Arithmetic Tests* and the *Oral Word Reading Test.* The last three named tests were all standardized in 1954, so the normative data is now somewhat limited. Due in 1981 is the New Zealand developed and normed Test of Scholastic Abilities (TOSCA) which should replace the OTIS.Due also in 1981 are two other normed tests, the Proof Reading Test of Spelling and a New Zealand standardization of the Burt Word Reading Test.

On the surface at least, test users in Australia are better supplied. They have more achievement tests (e.g., *ACER Primary Reading Survey Tests, ACER Mathematics Profile Series*) more general ability tests (e.g., *ACER Lower Grades Ability Scale. ACER Tests of Learning Ability*) and more special purpose tests (e.g., *ACER Checklist for School Beginners, ACER Shorthand Aptitude Test*). However, the large and diverse population, coupled with differing state educational systems, may mean that the number of tests suitable for a specific use is strictly limited. Tests are usually developed for particular populations and education systems so, the Australian user must be vigilant in making sure that the test is suitable for his or her purposes.

Conclusion

By considering a test's *validity, reliability* and *usability* it will be possible to decide whether the test will perform the function you have in mind. If an evaluation of the test indicates that it does not meet your requirements, time, effort and money have been well saved. It will also ensure that tests are used as the servant of teachers and pupils, and do not become their masters.

Evaluation Checklist

The characteristics of tests that have been outlined in this article can be used as a basis for evaluating the potential worth of any test. By systematically recording information about these major characteristics, information that can be used in decision-making can be quickly summarized. Item 9 of this *set* is such a list. It is not copyright and you may duplicate it as you wish.

Suggestions for Further Reading

Bauernfeind, R.H.
Building a School Testing Programme. Boston, Houghton Mifflin, 1963. (A good introductory text.)

Ebel, R.L.
Essentials of Educational Measurement. Englewood Cliffs, New Jersey, Prentice-Hall Inc., 1972.

Gronlund, N.E.
Constructing Achievement Tests. Englewood Cliffs, New Jersey, Prentice-Hall Inc., 1977.

Lyman, H.B.
Test Scores and What They Mean. Englewood Cliffs, New Jersey, Prentice Hall Inc., 2nd ed., 1971. (A good introductory text.)

Thorndike , R.L. and Hagen, Elizabeth
Measurement and Evaluation in Psychology and Education. New York, Wiley, 1969.

Test Evaluation Sheet

Identifying Information

Test Title ____________________ Author(s) ____________________

Publisher ____________________ Publication date ____________________

	Characteristics	Comments
Aids to inter-pretation	Functions outlined Guide for interpretation Guide for use of results	
Validity	Type(s) reported and values shown	Content ____________________ Concurrent ____________ Predictive ____________ Construct ____________________
	Criteria described Face — item arrangement — page layout — quality of illustrations	
Reliability	Type(s) reported and values shown	Split-half ____________ Parallel forms ____________ KR ____________ Test-retest ____________ Standard Error of Measurement ____________
	Method used Sample(s) described	
Usability	Administration — Special training necessary — time – power/speed — suitability of instructions — practice exercises — overlapping /discrete Scoring — type of key — ease of conversion — treatment of errors Examinee appropriateness — instructions — items — mode of response	
	Norms — types of derived scores	PRs (age) ________ PRs (class) ________ Deciles ________ IQs ____________ Grade equivalents ____________ Stanines ________ Other ____________
	— age range covered — population described — sampling/number of cases	
Economy	Cost of each component	Manual $ ________ Booklet $ ________ Answer sheet $ ________ Marking Key(s) $ ________ Other $ ____________
	What is re-usable? Time for test marking Time for interpretation	

Identifying information

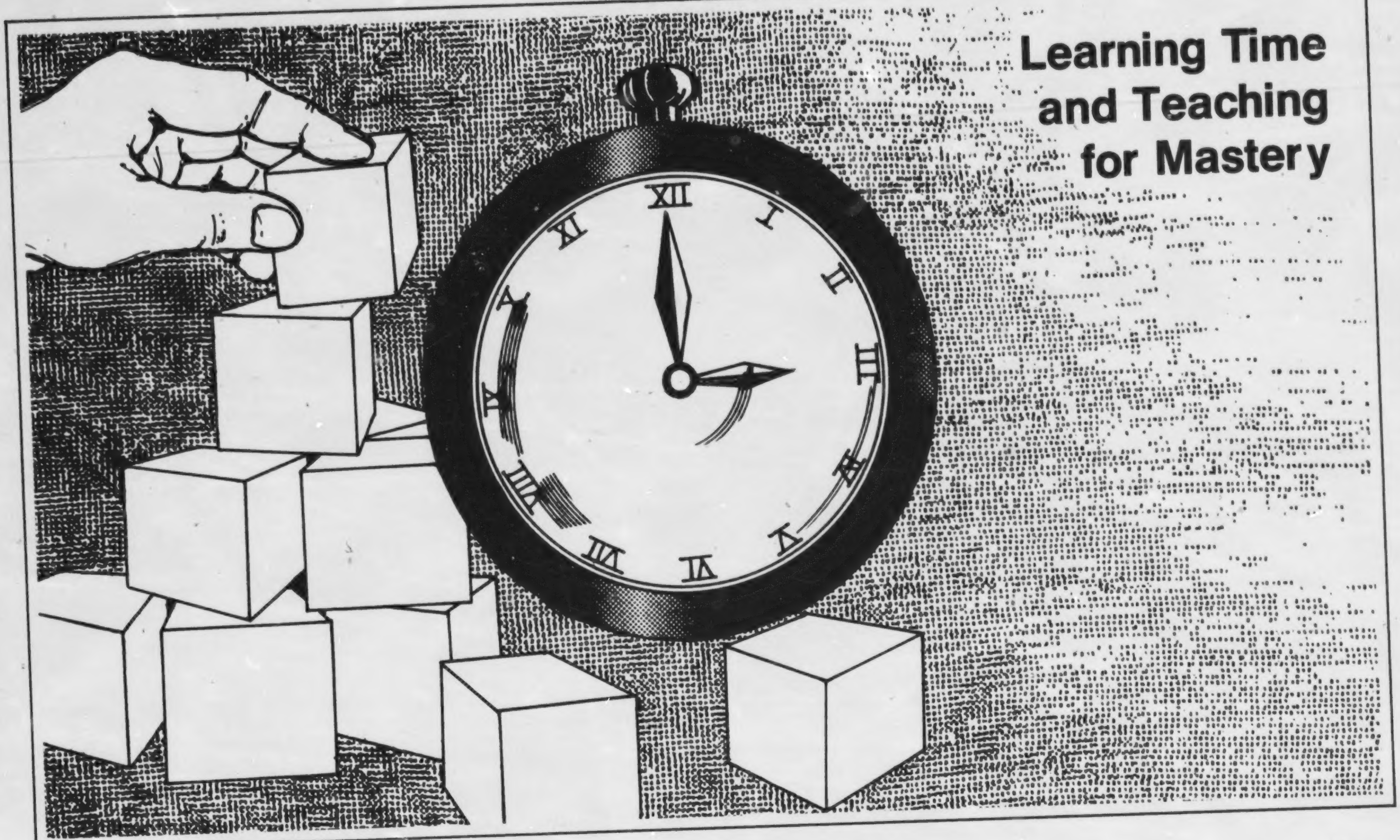
Test Title The Larsen-Hammill Test of Written Spelling
Author(s) Stephen Larsen & Donald Hammill
Publisher Academic Therapy Publications
Publication date 1978

	Characteristics	Comments
Aids to interpretation	Functions outlined	Two primary functions (assess spelling level and specify areas of weakness) plus four other uses described.
	Guide for interpretation	Interpretation of four patterns of scores given; includes explanation of derived scores.
	Guide for use of results	Some very general guidance in use of results given.
Validity	Type(s) reported and values shown	Content Achieved by analyzing 10 basal spelling series. Concurrent Range·69–·92; Med·82 Predictive Not reported. Construct Some evidence presented.
	Criteria described	Clear description given of validation criteria.
	Face — item arrangement	N.A.
	— page layout	Answer sheet and class score sheet clearly presented.
	— quality of illustrations	N.A.
Reliability	Type(s) reported and values shown	Split-half Not reported Parallel forms 1 form only KR21 range·78–·90; Med·89 Test-retest Not reported. Standard Error of Measurement Range 1·4–3·8; Med 3·5
	Method used Sample(s) described	Reliability data gathered in conjunction with standardization. Sampling as for norms.
Usability	Administration	
	— Special training necessary	Not needed for administration.
	— time – power/speed	Time not stated. A power test. Approx. 20 minutes
	— suitability of instructions	General directions only. Precise wording left to examiner
	— practice exercises	None included.
	— overlapping/discrete	Two separate subtests—predictable and unpredictable words. Some overlapping within each.
	Scoring	
	— type of key	List of correct spellings in manual.
	— ease of conversion	Simple conversion – clear tables.
	— treatment of errors	No specific guidance.
	Examinee appropriateness	
	— instructions	Examiner given some discretion.
	— items	Satisfactory – reflect content validity for the U.S.A
	— mode of response	Examinee writes words.
	Norms	
	— types of derived scores	PRs (age) — PRs (class) — Deciles — IQs — Grade equivalents ✓ Stanines — Other Splg Ages and Splg Quotients
	— age range covered	Age 5·0–13·5; Grades 1–8 (USA).
	— population described	Described by location, sex, class, age.
	— sampling/number of cases	Total sample: 4544.
Economy	Cost of each component	Manual $ 5·00 (US) Booklet $ N.A. Answer sheet $ 1·50 per 25 Marking Key(s) $ N.A. Other $ 0·20 Class Score Sheet
	What is re-usable?	Manual
	Time for test marking	About 2 mins. per paper.
	Time for interpretation	Estimated as 2 hours per class lot

Item 10

set research information for teachers
number two 1980

Learning Time and Teaching for Mastery



Sue Price

Learning Time and Teaching for Mastery

By Graham Ward
ACER

What is Mastery Learning?

Despite the considerable differences in the rates at which students learn, almost all pupils can satisfactorily understand and be proficient in school subjects if

1. conditions are made appropriate for learning by providing instruction which is systematic and well organized;
2. students can be motivated so that they are willing to work at the required learning;
3. students are provided with adequate help and assistance when and where they encounter learning difficulties, and
4. they are given enough time.

Introduction

This idea of MASTERY LEARNING has had a long history: individualized instruction plans were devised by H.C. Morrison and C.B. Washburne in the 1920s and 1930s. These fixed the minimum level of performance required to reach mastery, required a demonstration of the mastery of a unit before students were advanced to the next unit and provided the extra time required for the relearning of unlearned material. The principles have not changed but they have been filled out and techniques have been devised to help put them into practice.

J.B. Carroll in 1963, using the principles of modern learning theory, produced an influential paper entitled 'A model of school learning'. He began with the idea that a student's aptitude predicts either the level which learning will reach in a fixed time OR the amount of time which will be needed to reach a given level of understanding. He argued that if sufficient time is not spent then the learning will fall short of the mastery criterion level. But when the time spent equals the time needed learning will reach the mastery level.

The time needed by a learner was seen as influenced not only by the aptitude of the learner but also by the quality of the teaching and the ability of the learner to understand the instruction.

B.S. Bloom extended these ideas and provided details for a teaching strategy. This involved specifying objectives, constructing and using diagnostic tests and providing alternative instruction to overcome the difficulties identified.

In later work Bloom elaborated his ideas and presented research evidence which stresses the attitudes, skills and knowledge which students bring to each new learning task. He emphasized that the quality of instruction was very important and described further the prominent role of both feedback and corrective procedures in such a learning program. What has been learnt becomes the base on which new learning builds. But in addition, the task of learning becomes easier with practice, from unit to unit.

Is Mastery Learning Practical in Classrooms?

A number of teaching strategies have been devised. They are all based on the premise that all the students are capable of achieving the objectives of the course. They have several common characteristics:

1. they require the objectives to be developed and stated in specific terms beforehand;
2. they divide the course of instruction into small units, for example, into units taking about two weeks;
3. they prescribe the level of performance which a student is required to reach before being permitted to proceed;
4. they employ diagnostic tests at regular intervals throughout the course to determine whether a student has or has not achieved mastery and if not, why not;
5. they provide help for learners who have not reached the mastery criterion level.

It is the last two characteristics which are perhaps the most important. The original teaching might be of a whole class and paced by the teacher, or it might be individualized and paced by the student, but diagnostic testing will be used after the initial instruction to identify areas of difficulty so that remedies can be employed. As Bloom pointed out:

> *The key to the success of mastery learning strategies largely lies in the extent to which students can be motivated and helped to correct their learning difficulties at the appropriate points in the learning process.*

Those students who initially fail to reach the mastery criterion level must spend additional time re-learning so that they can overcome their difficulties. Extra time means extra learning: this is the centre of mastery learning.

Research Project

In 1979 I carried out an investigation into the effects of a diagnostic and re-learning procedure on achievement. The time taken and the efficiency of the learning over a sequence of three units in a self paced learning program was evaluated. Fifty-nine students at Year 8 level in an independent boys' school were randomly assigned to two groups, one of which became the experimental group and the other the control group. The groups were taught by different teachers. A three-part programmed textbook on matrix algebra was used as the teaching material. Students in the experimental group were required to reach a mastery criterion level of 85 per cent on each unit before proceeding to the next unit in the sequence; they were set the task of reviewing and relearning material not mastered during the initial presentations; they were provided with sufficient time and help so that each got to the mastery criterion level eventually. The control group students went straight on to the next unit whatever their score. In both groups the materials were studied at the student's own pace and the times spent in the original learning and in any re-learning were recorded. Both the experimental and control groups were required to relearn the third unit to the mastery standard. The review material consisted of a more detailed programmed text and was supplemented by tutoring for those students who still failed to reach the criterion level after using the written material. The classroom conditions and the teachers' roles were kept as similar as possible in the two groups.

An examination of previous research studies showed that there was a considerable body of experimental evidence showing the positive effect of mastery teaching, but, there were only a few studies which examined the time taken or which related achievement and time taken.

Results of the Study

1. There were significant differences in achievement between the experimental and control groups. The scores of the experimental group increased despite evidence to suggest that the material of the third unit was more difficult. The experimental group scored higher than the control group in both Unit 2 and Unit 3 tests.

2. There was evidence that the increased knowledge and skills brought to the study of later units by the students in the experimental group was a factor in explaining their higher scores in those units.

3. The experimental group took longer to study the learning materials in the later units (first time through) than did the control group. It may be that the review procedure was disliked and that students saw that it could be avoided or reduced by a more careful and complete initial study of the materials; or it could be that the students were encouraged to invest more energy and time in the study by the higher scores they obtained when they did so.

4. As the units proceeded fewer students in the experimental group needed to re-learn and the time spent on re-learning became progressively less as a proportion of total time and in relation to initial learning time. However, just over half the students in the group were still required to re-learn after Unit 3.

5. There were many students for whom the re-learning, which involved a lot of time, was necessary to maintain mastery levels.

6. The control group took almost as long in relearning the material of Unit 3 as the experimental group spent in the review of all units.

7. The efficiency of the initial learning was measured for each unit. The score on the test was divided by the time spent on the unit (adjusted for the length of the unit). Learning efficiency rose in the experimental group but declined in the control group. The increase in initial learning efficiency was gained in part at the cost of the time spent in the review of the previous unit. When this time was taken into account the differences between the units were not so marked. Efficiency fell markedly in the experimental group in Unit 2 due to the time spent in the review of Unit 1, but rose again in Unit 3. Although Unit 3 efficiency was higher in the experimental group the difference was not statistically significant. It was concluded that the higher scores were gained at the cost of the additional time spent. Extra time was exchanged for increased achievement. The experiment was a short one. It is interesting to speculate what the result might have been had the experiment extended to further units.

8. Despite the fact that both groups learned Unit 3 to the same mastery level the experimental group scored higher than the control group on both a summing-up test at the end of the work and on a retention test presented ten days later.

9. The effects of ability were tested by dividing each group into two ability subgroups. The experimental treatment appeared to be equally effective for both levels of ability. However, in two ways the lower ability sub-group in the experiment became more like the higher ability group: the decline in the total time they spent per frame was greater and their score per unit of time spent in initial learning increased more rapidly.

Implications for Practice

Providing a diagnostic review procedure, requiring students to reach mastery before permitting them to proceed to later units in a hierarchical learning sequence, and giving sufficient time for students to undertake the relearning that is necessary, will *significantly increase achievement*. This will be so whether the learning is measured during, or at the end of the learning sequence, or some time after.

There is evidence that the diagnostic review procedure encourages students to do their initial learning of new material (after the experience of reviewing and re-learning) more carefully, and that this expenditure of time and effort contributes toward higher test scores in later units. The time required for re-learning in later units is thereby decreased. The higher scores and the reduced need for re-learning may both act as reinforcers for more high effort learning. The students bring to the study of later material better knowledge, skills and attitudes and so do significantly better. This emphasizes the importance of teaching to high levels of understanding in the early stages of a learning sequence. As the level of prior learning increases so too does the effectiveness of the later learning based on this.

Remedial work plays an important role in maintaining high levels of learning. The opportunity to review and re-learn is of most value when provided early in the learning sequence. The regular provision of help and assistance in overcoming difficulties and misunderstandings throughout the learning program appears to be more effective than such assistance provided at the end of a sequence of units. Having a working system for getting information about how much has been learnt and where difficulties are arising is most important.

There are considerable differences in the amount of time and effort different students require for both learning and re-learning. Teachers must provide opportunities for new or extended learning for those students who finish the material before others do so. These extension activities will be required especially if the initial instruction is individualized or self-paced. There will be a need to distinguish the subject material and the skills which require mastery from enrichment material and activities. There are, therefore, important implications for the curriculum.

Discussion

Mastery learning assumes that what is to be learned can be analysed into components and that learning is sequential: what is taught at any one stage facilitates (or is a prerequisite to) what is to be taught later. Is mastery learning appropriate only to teaching the basic skills, concepts and facts? These the student cannot afford not to learn and they are, therefore, important enough to justify the allocation of the time, effort and resources required for their successful mastery. There are also many subjects where knowledge is complex, where tasks are virtually unlimited and where learning can seldom proceed through a neat sequence of stages. These subjects have goals to work toward rather than goals to be achieved. Is mastery learning less appropriate in these subjects?

There is strong evidence to suggest the re-learning time declines for many students as they proceed. There will be, however, some students who require a lot of re-learning time if they are to maintain the high mastery standard. The teaching strategy used will need to provide all students with the time that they require for learning and with incentives to use that time profitably. But time invested in the earlier stages of a learning sequence will increase the effectiveness of later related learning.

Notes

The influential paper by J.B. Carroll can be found in Carroll, J.B. "A Model of School Learning". **Teacher's College Record,** Vol. 64, No. 8, May 1963.

The first work by Bloom on teaching strategies for mastery learning can be found in Bloom, B.S. "Learning for Mastery". **UCLA Evaluation Comment,** Vol. 1, No. 2, 1968. It is easier to find, reprinted, with some alterations, as Chapter 3 in Bloom, B.S., Hastings, J.T. and Madaus, G.F.: **Handbook on Formative and Summative Evaluation of Student Learning,** New York, McGraw-Hill, 1971. His later work can be found in the following book, from which the quotation comes. Bloom, B.S. **Human Characteristics and School Learning,** New York, McGraw-Hill, 1976.

The research project carried out by the author can be found written up in Ward, G. **Learning Time and Teaching for Mastery,** Hawthorn, ACER. Occasional Paper No. 15, ACER, 1979.

Those interested in following up mastery learning will find the following books interesting:

Block, J.H. and Anderson, L.W. **Mastery Learning in Classroom Instruction** New York, Macmillan, 1975.
Torshen, K.P. **The Mastery Approach to Competency Based Education** New York, Academic Press, 1977.

Item 11

set research information for teachers
number two 1980

Beginning Teachers:

Modern Day Robinson Crusoes

Beginning Teachers: Modern Day Robinson Crusoes

By David Battersby
Massey University

Discipline is more a problem, though not recognised as such, to the beginning teacher . . .
A new teacher is more likely to have an idealistic conception of the student-teacher relationship than is an older teacher.

These are comments from the noted Sociologist, Willard Waller, in 1932. After 50 years and nearly 500 research papers there seems to have been little change. Indeed, in recent literature one finds repeated reference to 'discipline' and 'classroom methods' problems, as well as to the 'idealism' of young neophyte teachers. Coupled with this are numerous emotive gems: beginning teachers are 'strangers in an unfamiliar environment never equipped with a sense of belonging'; all new teachers have 'formidable', 'painful', 'confusing' and 'frightening' experiences which 'panic' and 'terrify' them; while one author even refers to the 'undesirable gastric distress' which often besets young uninitiated teachers.

Is it true that **all** beginning teachers suffer such hardships, distresses and problems during their first year of teaching? To date, our surveys and questionnaires tend to suggest that our beginning teachers are like Robinson Crusoes, each alone on his island, struggling to survive with a few bits and pieces salvaged from the wreck.

What We Need to Know

For research to be of any assistance we need to know exactly what are the everyday realities faced by teachers during their first year in the profession. So far, research has not been of much help.

There have been too many paper-and-pencil surveys, questionnaires and attitude inventories collecting thin 'slices of data' on the experiences of neophyte teachers, at the expense of longitudinal, observational and case study research. The research done so far has a sameness about it. While the findings are similar, and sometimes interesting, they fail to capture or even tap the complexities and dynamics of what it is like to be a first year teacher.

Of concern also, is the fact that policy making bodies and agencies who fund research, are more inclined to accept findings which are derived from these so-called 'scientific instruments' — such as paper-and-pencil questionnaires — than from observational investigations or case studies.

A Case Study Approach

Ideally, research designed to tap the realities faced by first year teachers should be longitudinal in form so that changes in the group, and in individuals, can be monitored; it should allow the researcher to undertake regular observations and to become immersed in the group(s) being studied; and, it should enable the researcher to expand the scope of his inquiry via questionnaires and surveys if and when necessary.

A project in the Waikato in 1979 attempted this. It followed a group of 38 beginning primary teachers — nine of whom were university graduates — through their first year of teaching. Data was systematically collected not only from the 38 teachers, but also from their principals, senior teachers, colleagues and inspectors. This data was in the form of interviews, observations, documents and questionnaire responses, as well as diary accounts from each of the first year teachers. The researcher was a recent neophyte teacher himself and was in the same age group as most of his sample; he had no ascribed affiliation with the lecturing staff of a teachers' college or university, or with the Department of Education; and he spent most of his time in the schools.

The very human extracts from the Waikato research which follow should remind us that policies and statistics are about people, and should give depth to general discussion of beginning teachers' problems.

Example 1: Children's Health

During the year most of the neophyte teachers encountered amongst their pupils the various types of common childhood illnesses and injuries (e.g. colds, measles, grazed knees). However, for a small group of teachers, the health of various children in their classes was constantly alluded to both in interviews and diary accounts. 33-F (Teacher 33, female) spoke about one of her pupils in the following terms:

> *A revolting creature of a child – covered in sores and infection. He had all this white ointment up and down his legs. The headmaster brought him in and showed him to me. I told him to sit on the mat. After ten minutes, I was sitting on the mat, doing something, and I asked him where the ointment had gone. The kids said, "It's on the mat. It's on the mat. On the green mat" (laughs). That's exactly what I hate about them – scabby little things.*
>
> *(33-F: Feb)*

Later, when referring to this child, she explained her uneviable position:

> *They went into their groups and I was standing up the back there and the public health nurse came in. She was fed up with it because it was such a bad area for ear, noise and throat infections. Anyway, she said the whole family's under surveillance. She had his younger brother there and him, and she was going to get the rest of them. They checked them regularly and they're always infected. I said, "All year?", and she said, "Yes, they just keep reinfecting each other". She can't do a thing about it.*
>
> *(33-F: Feb)*

A similar situation existed in the school of 31-M and 34-F where these teachers were in regular contact with children like those described by their senior teacher:

> *And this little girl in the green dress, well, she just pongs all day. While she was in the special class we could deal with her because they've got washing facilities down there. In the withdrawal class there's nothing. What we need is a hose (laughs) – a fire hose that we can hose the kids down with.*
>
> *(Senior Teacher: Jan)*

For another three teachers, headlice was the main cause of worry. 32-F expressed a common reaction:

> *I nearly died of shock the other day. The school nurse came round and said, "I believe one of your children has got nits?" Of, course, I've never come across nits before, and I thought, "Aagh!" (laughs). I found out three of them had them.*
>
> *(32-F: Feb)*

The problem of headlice was more personal for 36-F:

> *. . . we had an outbreak and six teachers in the unit got them . . . It's a jolly nuisance.*
>
> *(36-F: Feb)*

This nuisance was to become a financial burden, much to the displeasure of 36-F:

> *When I got the nits I was given free stuff but you couldn't wash your hair for ten days so I had to go to the chemist to buy stuff that you could wash your hair with. Then I had to buy a nit comb and then you had to buy scarves to tie your hair up with. Apparently, we're not getting any compensation for the nit comb or shampoo. I think that's pretty tough and so far I'm out of pocket about forty dollars.*
>
> *(36-F: May)*

Example 2: Getting on with the Principal

12-F's principal commented most favourably about her in both openended questionnaire responses and in interviews. A common example was the following remark:

> *12-F, of course, is quite a cracker-jack. She really is. She's good, dynamic, innovative – She cares about kids. She's concerned for them. She's rather unusual.*
>
> *(12-F-Principal: Oct)*

What gave rise to these comments? What was 12-F's reaction to, and relationship with, her principal? For the first two weeks of the school year, 12-F had made little mention, other than brief passing references, of her principal. However, starting in February, and at various other times in the year, the principal visited her classroom. Initially, these visits were to check classroom equipment:

> *Last week, I think it was, the principal came in about five times in the one day, but it was for things like checking to see if I had a clock, then he'd come back for something else.*
>
> *(12-F: Feb)*

Later, the principal came into 12-F's classroom specifically to observe her teaching. His ability to avoid attracting the attention of the teacher on such occasions impressed 12-F:

> *On Friday he walked in here and actually I was blasting the kids and I never realised he'd come in (laughs). He just merges in and I never see him. He gets down to the kids' level physically and asks them what they're doing, and joins in. I just forget he's there which I find is really good and helpful. It's also helpful to the kids. I don't make a thing about him being in the room, so therefore they don't get worried.*
>
> *(12-F: March)*

Incidents, such as this, fostered the development of the professional relationship between them to such an extent that, unlike a number of other teachers in the study, 12-F said she felt at ease when the principal visited her classroom:

> *He shows he's human to the kids. You know, you chop them down for being naughty, and he tells them what he did when he was a child, which was twice as bad (laughs). He's done nothing short of rape and murder, which is good in one sense. He's a great principal.*
>
> *(12-F: Nov)*

Example 3: Hopes and Fears

Teacher 31-M had visited the school to which he was to go during the last weeks while he was at teachers' college. He was told by the principal that he would be team teaching in a composite class in the middle school. In an interview after this visit, 31-M remarked:

> *It'll be a challenge for me to work with people and to handle the kids – the kids are going to be quite tough. It will be a good experience. Flexibility, that's the key word.*
>
> *(31-M: Nov)*

In the confidential report sent to the principal from the teachers' college, confirmation appeared of 31-M's appointment to the middle school:

> *(31-M) should cope very satisfactorily in his first teaching post, which is in a standard two to four composite class. However, he has had no previous experience in a composite class, and he may well need help with organisation and management, especially initially.*
>
> *(E2/16A Report)*

In another interview at the end of the college year, 31-M outlined in more detail the unit he thought he would be teaching in during 1979:

> *There are three teachers in the unit. There is one male and a couple of females. They've a withdrawal room where they take about fifteen funny ones. They have them in there on a really structured programme. They have another withdrawal room – like a padded cell – and they have them in there when they're really going to blow. They get them in there and just tell them to stay there. So, that should be an experience. I'm looking forward to it.*
>
> *(31-M: Dec)*

There was another first year teacher appointed to the same school, 34-F.

The Day Before

On arriving in the staffroom on the morning of the 'teachers' day', a day just for the staff before the children arrived, the two first year teachers were greeted with this statement from the Senior Teacher of Junior Classes (STJC):

> *. . . I don't really want to say too much to either of you. The situation since you visited here last year has slightly altered, but don't worry, you'll still be here.*
>
> *(31-43-STJC: Jan)*

Several minutes later, the principal called the STJC and the two new teachers into his office. It was there that 31-M was told:

> *It was in the last week of the school year that we really knew about Jenny, our Deputy Principal being transferred . . . This means we have to rearrange things, so that you (31-M) will now be working in the junior school with (the STJC), and you're very fortunate because I can't think of a better person to be supporting you and helping you this year.*
>
> *(31-34-P: Jan)*

34-F, on the other hand, had her expectations confirmed:

> *(34-F) you will be with Margaret. She is in unit four, and you will be working in there with a very small group of new entrant children. She's a very experienced teacher, and she will be directly responsible for you.*
>
> *(31-34-P: Jan)*

After handing out class lists to each of the teachers, the principal remarked:

> *The most important thing that I have to explain to you before you go to your meeting is that you are full members of staff and we will welcome your skills and experience and expertise and all the ideas that you've picked up at teachers' college. But I want you to remember too that there are some very experienced teachers here. These people will go out of their way to assist you. Don't think at any time you are on your own. I think that is the main thing to remember. This place only survives because of the nature of the school and because of the teamwork of the people here.*
>
> *(31-34-P: Jan)*

At this stage, 31-M appeared a little disappointed with being told he would be teaching in the junior school:

> 31 M: *Will I be teaching in the junior block for a whole year?*
>
> P: *. . . it all depends how things are going with numbers and so on . . . I will think you will remain in the junior area anyway. Do you feel unhappy about that?*
>
> 31-M: *I suppose I won't mind the little ones. You can get used to them.*

Upon returning to the staffroom, 31-M's reaction to the meeting was sought:

> Interviewer: *What is your reaction to being appointed to the juniors?*
>
> 31-M: *It's good, you know, just to be able to walk into another team.*
>
> Interviewer: *It's a bit of a change isn't it?*
>
> 31-M: *It makes training college look a bit farcial. I spent the last two months at training college getting ready for the middle school (laughs). I'll be dragging out my notes from section* (teaching experience) *to remember what the juniors are like.*

At this juncture, the principal called a brief informal staff meeting at which he welcomed and introduced the two first year teachers to the staff. Following this, the staff of the junior department, including the two new teachers, met to discuss planning arrangements. Again, the neophytes — particularly 31-M — were given reassurances by the STJC:

> *If at any stage you feel you can't take any more, or you know that if a child looks crossways at you, you are going to scream, well, just go. You can let me know quietly, and that would probably be best, because if anyone wants to know where you are we can make excuses. One of the quickest ways you'll drive yourself nuts is to keep things bottled up. If someone is irritating you in some way, let them know . . . If you find things confusing, particularly you (31-M), I'll do my best to unscramble confusions. Again it's up to you. Let me know what you are confused about and I'll try and help you . . .*
>
> *(31-34-STJC: Jan)*

A few minutes later, the STJC introduced some banter into the conversation:

> STJC: *(31-M) what did you plan at the end of last year at college?*
>
> 31-M: *I didn't do anything. I refused to.*
>
> 34-F: *I didn't either.*
>
> STJC: *All the traditions of a typical third year student. I'm proud of you (laughs) . . . You could have done a hell of a lot of planning and it would have been lost anyway.*

During the morning tea break, both first year teachers said they were impressed with the STJC:

> 34-F: *She seems really nice. I met her when I came out last year . . .*
>
> 31-M: *Nice friendly staff. They reckon all this revolves around (the STJC). She makes both the uppers and lowers mix in . . . She's good.*

Following morning tea, the STJC met with the two year-one teachers and introduced them to some of the school's policies:

> *There are certain things we have to do, like keeping registers, and I'd like you to watch that it is done in the particular way (the principal) wants it . . .*
> *School officially starts at five to nine. We go through till twelve and then from one till three . . .*
> *There's very little in the way of after-school activity with the children. Most of them have either got day care centres to go to, or people to mind them. We have a fair number of working single parents or two working parents . . .*
>
> *With regard to your work plans, there will be a team plan which will be an overall plan. As well as that, there will be specific plans written by you. Don't go mad (laughs). Words are only words – it's the way you put those words into action that's important. Don't feel that you have to write down, for God's sake, every question that you're going to ask . . .*
>
> *I would like you to make an effort to get to know the kids very well, especially the children in your own home group . . .*
>
> *(31-34-STJC: Jan)*

She hastened to add a personal experience in this regard:

> *When I used to teach children very similar to these in another school, I felt very lonely because when I came into the staffroom and said, "Guess what, old Peter recognises three," and everybody says, "Yeah, so what!" It's the most dreadful feeling. Here, if you walked in and said that, everyone would say, "Hooray." I think if you're doing a good job the people here will let you know.*
>
> *(31-34-STJC: Jan)*

During the lunch break which followed, the principal spoke privately about his two new appointees. The extract below is taken from the field notes of the day, and relates to this conversation:

> *He mentioned how, in some schools, year ones are left to sink or swim. He emphasised that this would not happen in his school. This is the primary reason why 31-M was appointed to the junior section. Originally, the DP was assigned to look after 31-M, but with the transfer of the DP to another school, the principal did not think 31-M could handle the situation he was originally supposed to go into. The principal cited the case of how children sometimes 'bash' the teachers in the unit and shout all kinds of swear words at them. He also mentioned that last year he gained the impression that 31-M could be easily pushed around by the children. This being the case he felt that he needed guidance from a person like the STJC . . .*
>
> *(31-34-F/n: Jan)*

After lunch, 34-F met with her senior teacher, while 31-M and his syndicate of teachers discussed the programme they were going to instigate for the children on the following day.

The First Day

Both were there early on the next morning. During morning tea on that day, 31-M remarked of his pupils: 'They're small and thick' . And several minutes later:

> *When I was on section* (teaching experience) *you could set the kids I had on research tasks or projects and they'd do them. They were great. We did this thing on Canada, doing filmstrips and that sort of stuff. They loved it. Kids made tapes and records. The kids I've got now – they've got no chance of doing that. I'll have to lower my expectations right down.*
>
> *(31-M: Jan)*

Later in the day, he made further mention of the children in his home group:

> *I got frustrated with their lack of work ability . . . I think they'll be all right. I'm just going to play it by ear and see how each day goes.*
>
> *(31-M: Jan)*

34-F, on the other hand, said she experienced very little difficulty. That afternoon, some of the teachers, including the two first years, met at the local tavern. The field notes of the day relate what happened:

> *The principal congratulated 31-M and 34-F on getting through their first day. He engaged in conversation with them for about twenty minutes telling them about his recent holiday. Both the first years seemed relaxed and talked freely with the other staff members. At about 4.15 pm, 31-M and 24-F began talking together of their experiences at the school thus far. Both said they thoroughly enjoyed the staff and the school. 31-M remarked that it was the best school he had ever been in and attributed this mainly to the principal and the STJC.*
>
> *(31-34-F/n: Jan)*

Reality Shock

Researchers have suggested that beginning teachers sometimes develop 'ideal' and 'unrealistic' images both of their roles as teachers and the schools they will be teaching in. Head lice came as a nasty shock to 32-F. Also a shock, but a pleasant one to 12-F, was the helpfulness of her principal. For 31-M his end-of-college visits to the school led him to believe that he would be teaching in a composite class in the middle school. In reality, however, he was appointed to the junior school, where on the first teaching day he not only found the children to be 'small and thick', but his own expectations to be 'far too high'

The reality shocks experienced by 34-F had occurred during her school visits at the end of the college year. Following an initial visit, and after speaking with the STJC, she remarked: 'I can't wait to get there.' However, during a second trip to the school she realised that the section of the school she would be teaching in was open plan. Previously, she had anticipated teaching in a single cell classroom. This lack of congruence, then, between her prior expectations and what she now experienced resulted in this reality shock.

Coping Strategies and Reverse Reality Shock

Of interest are the strategies adopted by neophyte teachers to counter their reality shocks. After learning she would be teaching in open plan 34-F spoke to a girl who had been to the school for practice teaching. The reassurances she received from this person gave her encouragement and rebuilt her expectations to the point where she said: 'I'm looking forward to it'.

It is also interesting to note that she also experienced the 'shock' which can result from an unexpected agreement between expectations and the reality. In this instance, 34-F felt that the relationship with her senior teacher would be similar to what had occurred during practice teaching. This did eventuate because the senior teacher had '. . . got all the activities ready, poems done and everything like that.' However, this shocked 34-F into realising that if she had gone into a single cell classroom, then 'there would have been nothing', and she would not have received 'all these ideas' nor 'learnt from the senior teacher'.

The Influence of Power: The 'Real Interests'

The moves and strategies to counter the reality shock experienced by 31-M were instigated primarily by the principal and STJC.

It was the STJC who, acting in a facilitatory role, forewarned the two neophytes that, '. . . the situation . . . (had) slightly altered' since they were last at the school. The change referred to by the STJC was that the DP had been transferred. It was this situation that the principal had seized upon to remove 31-M from the middle to the junior school. In reality, this rearrangement was made because of what the principal conceived 31-M's real interests to be:

> *. . . the principal did not think 31-M could handle the situation he was originally supposed to go into . . . He also mentioned that last year he gained the impression that 31-M could be easily pushed around by the children. This being the case he felt he needed guidance from a person like the STJC . . .*
>
> *(31-34-F/n: Jan)*

31-M believed it to be in his best interests to teach in the middle school. Both the principal and STJC had little difficulty in persuading 31-M to accept what they saw to be his real interests. Such acquiescence is evidenced in 31-M's statement that: 'I suppose I won't mind the little ones. You can get used to them.'

Although one can only speculate as to whether the principal would still have made this rearrangement if the DP had not been transferred, it is obvious that the strategy of concealing the 'real reasons' for the change from 31-M was an effective socialisatory move.

The reinforcement of the principal's and STJC's views of 31-M's real interests continued throughout the remainder of the first day. Indeed, statements from the principal such as '. . . you're very fortunate because I can't think of a better person (STJC) to be supporting you and helping you this year', and strategies adopted by the STJC (e.g., reminiscing about her life as a year one teacher and recalling her past experiences with past beginning teachers) embodies this to such an extent that 31-M was to remark that: '. . . it was the best school he had ever been in and attributed this mainly to the principal and STJC.'

Conclusion

Besides shedding light on some of the human realities faced by first year teachers, at least two practical applications can be drawn from the socialisatory episodes rererred to in this paper:

(a) Induction can be a worthwhile process with the presence of a qualified co-operating teacher. In the case of the two beginning teachers 31-M and 34-F, this person was the STJC. She judged that these teachers needed to be made aware of information such as: when the school officially starts and finishes; the school's policy on keeping registers; the type of children the school caters for and the backgrounds of the parents; lesson planning arrangements and the practicalities of planning; aspects of her philosophy (e.g., about children).

(b) Detecting and predicting reality shock and then countering it with various strategies (e.g., support and encouragement) can be an effective induction manoeuvre on the part of principals and senior teachers.

For Robinson Crusoe the severity and harshness of loneliness was the epitome of his early life on that isolated island. The presence of Friday, however, added a new dimension to Defoe's hero's island existence. In the same way, the help, guidance and 'craft knowledge' provided by an STJC and principal — and other teachers who befriend neophytes — can counter the loneliness and isolation felt by some beginning teachers at their first teaching post.

Notes:

Early Research on First Year Teachers

A fuller description of Willard Waller's work, particularly his research on the first year teacher, can be found in the following publication:

Waller, W. *The Sociology of Teaching.* New York: John Wiley, 1932, pp. 433-436.

New Zealand Research

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A study of year one teachers was carried out in 1978-9 by Mrs Allanah Lake, Principal of Opawa School, Christchurch under a research affiliateship to the University of Canterbury, Christchurch.

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Battersby, D. 'The Beginning Year for Six Teachers' in Mulford, W., Hughes P. and Burkhardt, G. (Eds) *ACT Papers on Education,* Canberra, College of Advanced Education, 1978.

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The following books provide some insights into the various aspects of the first year of teaching:

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The Microcomputer in School

1 A Research Project in Special Education

2 Back-up Services for Computer Assisted Instruction

3 The Microcomputer, what is She?

By Ken Ryba and Bryan Christiansen
Massey University

74

1 A Research Project in Special Education:

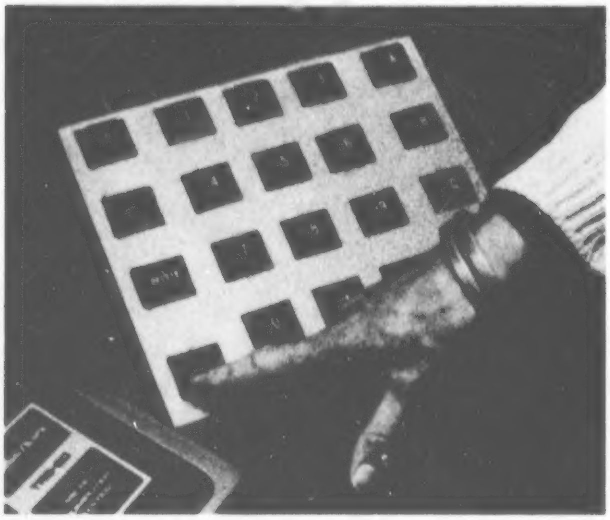
Practical use of a microcomputer for remedial teaching.

Background

Until very recently, computer assisted instruction was a sophisticated area of research that involved very large computer systems. Often the computer was centrally based at a university or technical institute and accessible via remote terminals linked to the computer by a telephone connection. The capital cost of such equipment is very high and only within reach of large institutions. Even when a central computer system is readily available, it is very expensive to provide and connect remote terminals. Despite research that shows convincingly that computers are effective teaching aids in special education, the complexity and cost of equipment discouraged the development of computer assisted instruction.

During the past few years there has been a significant revolution in the technology. Low cost microcomputers that have many of the capabilities of larger and more expensive computers are now available and computers are now designed specifically for use at home and in school. There are thousands of microcomputers used for academic instruction in Canadian and United States schools and much has been learned about how to program them. Specific computer languages have been created for the sole purpose of providing computer assisted instruction (CAI).

In New Zealand, relatively little work has been done with microcomputers in education. In mid-1980 there were only twenty schools with microprocessors. All of these were high schools and they used them almost entirely for computer literacy (teaching **about** computers) and in Maths and Science classes. The current research at Massey University is the only project in New Zealand that is especially concerned with the use of microcomputers in remedial education. That individual schools have to buy the equipment with their own money means that it is difficult for them to evaluate this new technology.



The simplified keyboard is a robust and easy to use device.

Teaching programs are stored on 'floppy' disks and fed into the computer by means of a disk drive system.

Our Project

The research at Massey University is to evaluate the utility of computer assisted instruction in special education. The work is being jointly carried out by the Computer Centre and Education Department. It is recognised that both technical and educational expertise is required to exploit this technology.

Work on the project began eighteen months ago with the purchase of a low cost TRS-80 microcomputer system. The TRS-80 consists of a keyboard unit (which also contains the microprocessor and memory), a T.V. screen and a cassette recorder. Data and instructions are put in via the keyboard, output appears on the T.V. screen, and programmes can be stored on cassette tapes.

Recently, a sound/slide projector has been 'interfaced' with (connected to) the computer. 35 mm. slides are displayed on the screen of a rear-image slide projector and accompanied by audio messages produced on a cassette tape player. Both the audio and visual output is controlled by the computer. This has proved very useful for developing programmes to teach word and number recognition.

A 'floppy disk' storage system was added last year so that a greater number of programmes can be stored and used rapidly. Special devices have been developed for the physically handicapped who are unable to operate the regular keyboard. Many of the teaching programmes make use of a light sensitive pen: the learner selects his answer and then points the pen at an appropriate position on the screen. The computer then tells the student whether the answer is correct or not. The light pen is an important development because it permits a basic type of interaction (pointing) between the student and computer. This can be used with both moderately and severely handicapped persons.

Cook Street Intellectually Handicapped Children's Training Centre was selected for the trial CAI work station. Trainees use the CAI equipment on their own but are supervised by a staff member, either a teacher or a volunteer helper. Over the past year more than 200 individual teaching sessions have been provided. Preliminary records show that pupils are able to learn successfully through interaction with the computer, but the computer is a teaching aid and not a substitute for more conventional instruction.

A major advantage of the computer is that students can work on their own at a task with a minimum of supervision. It has been found that many people prefer to work on their own with the computer — perhaps because they have experienced failure when learning with others. The computer is infinitely patient and works entirely at the learner's own pace. Learning programs are broken down into a series of small logical steps and advance automatically according to the ability and progress of each person. Immediate feedback is given to the student as to whether he or she was correct or not.

A large number of educational programmes have been developed by the research team for use on the microcomputer. All of these are concerned with practical academic concepts that are important for everyday living. The following is a list of programmes that are now available.

The pen is sensitive to light and can carry the pupil's response to the computer.

1. Numerical Programs

a. ADDSUB — adding and subtraction of boxes
b. PLONC — counting of boxes, more/less comparison of boxes, adding digits and boxes
c. COUNT — counting of $ s and * s

2. Audio-Visual Programs

a. SOCSIGHT – recognition of social words e.g., Exit, Ladies, Gents, Busstop
b. READING – discrimination of words heard on audio
c. MONEY – recognition of coins and concept of value
d. TOOLS – recognition of tools and their names
e. LEISURE – leisure pictures, choice of like or dislike that activity, learning the word describing that activity

3. Discrimination

a. MATCH – letter discrimination, number association of letter and digit numbers
b. STORY – short stories with multi choice questions
c. RECOGNIT – discrimination of letter and number sequences on keyboard.

4. Educational Games

a. REVERSE – reverse random list of nos. 1-10 into order
b. GUESS – guess a random no. 1-100 systematic decrease of limits
c. OANDX – noughts and crosses for two trainees to play
d. BOUNCE – aim is bouncing block to hit target

5. Social Skills

a. CLOCK — putting numbers on clock insert missing number onto clock, hourly time telling.
b. REGISTER — simulation of cash register giving correct change.

6. Teacher Instruction

a. GOALPLAN — multi choice questions on goalplanning for teachers of handicapped students.

If you are interested in the use of microcomputers for individual instruction at home or school, our research team would be pleased to advise you about the type of hardware and teaching packages most likely to meet your needs.

Notes

Research reports on the success of CAI for handicapped children are often tucked away in obscure journals. They can be found through indexing journals such as **Exceptional Child Educational Resources** and through a library they can be interloaned. Here are six recent articles of interest, including two from Australian journals.

Sandals, Lauran H. **Computer Assisted Applications for Learning With Special Needs Children**, a paper to The American Educational Research Association, San Francisco, April 1979.

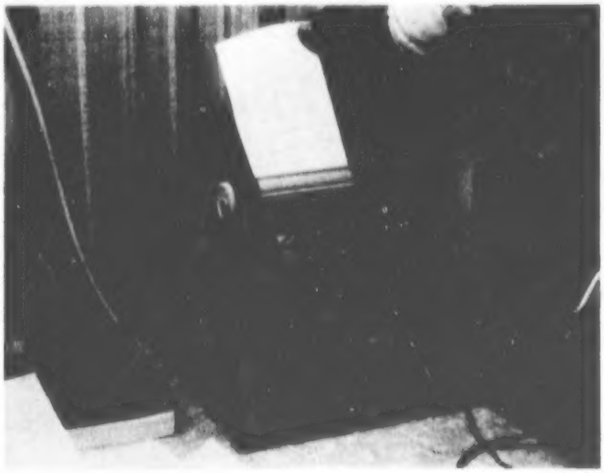
Chiang, Alice, and others, **Demonstration of the Use of CAI with Handicapped Children. Final Report.** Arlington, RMC Research Corp., 1978.

Dugdale, Sharon, Vogel, Patty, 'Computer-Based Instruction for Hearing Impaired Children in the Classroom' in **American Annals of the Deaf** Vol. 123, No. 6, Oct. 1978.

Toomey, John F., **A Controlled Experiment in the Education of the Severly Sub-normal,** a paper to the First World Congress on the Future of Special Education, Stirling, Scotland, June 1978.

Pollard, J., 'A Testimony to a Micro — Peter Can Now Read' in **COM-3 (Computer, Community, Communications),** No. 12 pp.12-20, Nov/Dec 1978.

McLeod, I., 'Computer Assisted Teaching With the Intellectually Handicapped' in **Modern Teaching** No. 41/42, pp. 17-28, Sept/Nov 1977.



At the end of each teaching session a permanent progress record can be generated by a 'line' printer.

2 Back-up Services for Computer Assisted Instruction

Microcomputers have great potential in schools, particularly for providing individual instruction. With low cost microcomputers and teaching software (programs) now generally available a profound change in teaching technology in both primary and secondary schools can begin. Already this educational technology is used extensively overseas, particularly in the United States where most microcomputers are manufactured. During 1979 more than one hundred thousand microcomputers were sold to American schools. One particularly successful use for them is for remedial instruction since the teaching can be tailored exactly to meet individual needs. Legislation in the United States (PL94/142) provides a firm rationale and, in certain cases, finance for this use of microcomputers.

Over the past two years microcomputers have become increasingly available in Australian schools and some states' Education Departments have purchased hundreds. But very little work has been done on how they can be used best. The most progress has been made by enthusiastic teachers, but their work has been uncoordinated, in isolation, and is virtually unknown in New Zealand. There are, however, three magazines published on computing in schools in Australia, QUICK, (Mick Shaw, Mt. Growatt CAE, P.O. Box 82, Queensland 4122), COM-3, (P.O. Box 268, Niddrie, Vic. 3042) and COMPUTERS IN THE CURRICULUM.

The major advantage of microcomputers is that they are entirely self contained and do not have to be linked to large central systems. Programming these machines is relatively easy but does require a considerable amount of practice for novice users. The fact that all microcomputers make use of a simple and common language called BASIC (Beginners' All-purpose Symbolic Instructional Code) means that programs developed on one computer are often compatible with another system.

But it must be recognised that the development of this educational technology in schools will depend to a large extent on the availability of supportive services. Several aspects need to be considered with regard to current and future needs.

1. *Advice on Selection of Equipment* — Not all microcomputers are appropriate for educational applications. Some systems are better than others and there are large differences in the cost of equipment. Not all computers are compatible with one another even though they use a common language (e.g., graphics codes and systems commands vary). Advice needs to be available on the most economic and efficient systems for use in schools. Also, purchasers need to know about servicing and depots for repair of equipment.
2. *Programming the Computer* — Teachers need to learn how to program the computer and methods for effective use of this tool in their own specific subject areas. It has been the case in other countries that Universities and Technical Institutes offer courses that assist teachers in gaining these skills. Inservice training is needed to provide teachers with an appreciation for ways in which computers can be programmed for instruction in the classroom.
3. *Development and Dissemination of Teaching Software* — It is desirable to have a 'network' of resources that will minimize duplication of effort and help ensure that teachers have knowledge about and access to as much teaching material as possible. As it now stands, schools are unlikely to be aware of developments being made in other educational settings. Even when someone is a competent programmer, a great deal of time and effort is required to develop teaching software. As well, a lot of software is now commercially available.
4. *Administration and Scheduling of Microcomputers in Schools* — Advice is required to assist educators with making decisions about the physical arrangement and location of the CAI work station in the school. Problems of timetabling need to be dealt with to help ensure that most the effective use is made of the microcomputer for individual tuition and computer managed instruction.

It goes without saying that the successful introduction of this new technology will depend upon the availability of supportive services such as those mentioned above. For example, in New Zealand there is an immediate need to establish a central body that can provide practical advice and support to schools. Such a body could meet all of the needs stated above and foster the development of an integrated approach to computer assisted instruction.

3 The Microcomputer, what is She?

Any computer system is made up of three parts; a processor, a memory, and input and output equipment. In a microcomputer the processor and memory are mass-produced silicon chips, the least bulky and the cheapest parts of the system.

1. The Processor

In essence the processor is many thousands of switches and like any on/off switch each one can be either on or off, but only one of those at any one time. By having a code involving the state of a set of switches, an extensive, but not very complicated system of holding and processing information can be created. Computers can hold, process and communicate information only in this way, but can do it in microseconds.

For us to understand and communicate with the processor in its own way would involve us in learning what is like an extremely difficult foreign language, so computers have a built-in interpreter which translates back and forth between the processor's language and one of ours. This might sound tedious and inefficient, but modern computer interpreters work so fast that they are effectively invisible between us and the computer.

The most common interpreter language is BASIC which stands for Beginners' All-purpose Symbolic Instruction

Code. The vocabulary of BASIC is very limited, several *hundred words at most, and unlike English, must be used* with unfailing precision — the computer is very fast, but dumb! We tell the processor what to do by giving it a set of instructions called a 'program' (note spelling), written in the BASIC language. Learning to program a microcomputer is just learning to cut English down to the size of BASIC — however, once cut down, it can still handle mathematical calculations, extensive manipulation of words and characters, logical operations, and give the answers and responses back in numbers, figures, tables, words, diagrams, graphs, pictures and so on.

2. The Memory

The smallest unit of memory is called a 'bit' (which stands for binary digit), and 8 bits make up a 'byte'. Microcomputers handle information a byte at a time and memory chips can hold from 1024 (approximately 1000 so called 1 k) bytes to 128 k bytes. At early 1980 prices one k byte of memory costs about $15.

There are two distinct types of memory. The first is *Read Only Memory (ROM)*. It cannot be erased and always remains stored even when the power is off. A microcomputer uses ROM type memory to store the BASIC interpreter so that it is always there.

The second type of memory is called *RANDOM ACCESS MEMORY (RAM)* and this can be read by the computer and erased, changed, and revised by the programmer, and the information vanishes when the computer is turned off. This sort of memory does two jobs: it holds the program, that is, the instructions to the computer about what to do next; and it holds the data the computer is going to work on. Today we want the computer to help teach Alice arithmetic, tomorrow we want it to teach Betty biology: the RAM holds the arithmetic program and the data Alice gives it to work on (usually her right or wrong answers) today; tomorrow the RAM will hold a program for Betty's biology.

Programs can be 'loaded' into the RAM from the keyboard, the operator typing from a printed copy of the program. This can be a long and tedious business, and not the sort of thing a busy teacher has time to do. It is quicker to have the programme stored on a tape or some other mass-storage device.

It is the RAM's storage capacity that limits the complexity of the programs, and, for teaching, programs can be quite complex if they are to take account of the many different answers that can be given to, for example, social studies questions. Most microcomputers have a minimum of 4 k RAM and a maximum of 64 k, but some have up to 128 k. For Computer Assisted Instruction and using a cassette tape recorder to store programmes, 4 k to 16 k would be needed.

3. The Input-Output Equipment

Input and output devices make up the bulk of the microcomputer system and most of the cost. The universal input device is a keyboard which resembles that on a typewritter, but has added special function keys. The universal output device is a video display screen like a television screen, monochrome or colour, which typically has 16 lines, 64 characters long. Graphs etc., can be drawn with 48 points vertically and 128 points *horizontally*.

There are a variety of mass-storage devices used with microcomputers. The cheapest of these is an ordinary audio cassette tape recorder and tapes. But this method is limited in capacity, a little unreliable and relatively slow (loads an average 8 k byte programme in about two minutes).

Another device, known as a 'stringy floppy', utilises miniature continuous ribbon tapes (similar to dictaphone machine tapes) and is reliable and moderate in speed. At 1980 prices these cost about $300. The most expensive external storage device is the 'mini disk' which uses 133 mm diameter flexible (floppy) 'diskettes' that have magnetic coated surfaces. Each diskette will hold 80,000 (80k) bytes of information which may be read or written over and cost about $5. This method is very reliable and fast, (loads an average programme in seconds), however, the discs require more RAM memory and a different operator/interpreter programme. The diskette drive costs about $600.

Other input devices include **light pens** (simple to use and requiring relatively simple and inexpensive extra programming, RAM etc.); **telephone couplings** to receive data from far away or from other computers; **optical character readers** which can read print (so far very expensive and first developed for the deaf and for printing firms); and equipment that will recognise simple voice commands.

Output devices are important for teachers if they want to check the progress of pupils who have worked alone, and if details of results are to be stored, analysed, and used to help with planning new work. **Printers** of various sorts can cost as much as the microcomputer itself. **Speech synthesizers** are in their infancy but could help teaching non-readers.

Illustration

The Processor and Memory in the microcomputer are dealing with information in the form of electrical pulses within the circuitry in units of bytes (8 bits):

on off on on off off off on

The Programmer is dealing with a problem in the computer's language:

```
PRINT "THE GROANING SOUNDED LIKE A
FOGHORN WITH HICCUPS."
PRINT "IS THIS A METAPHORE OR A SIMILE?"
IF KEY = 'M' THEN PRINT "NO, THIS IS A SIMILE"
PRINT "THE WORD 'LIKE' IS A CLUE"
ELSE IF KEY = 'S' THEN PRINT "YES, YOU ARE DOING
FINE"
ELSE PRINT "YOU DIDN'T PRESS THE M OR S KEYS";
PRINT "TRY THE NEXT ONE"
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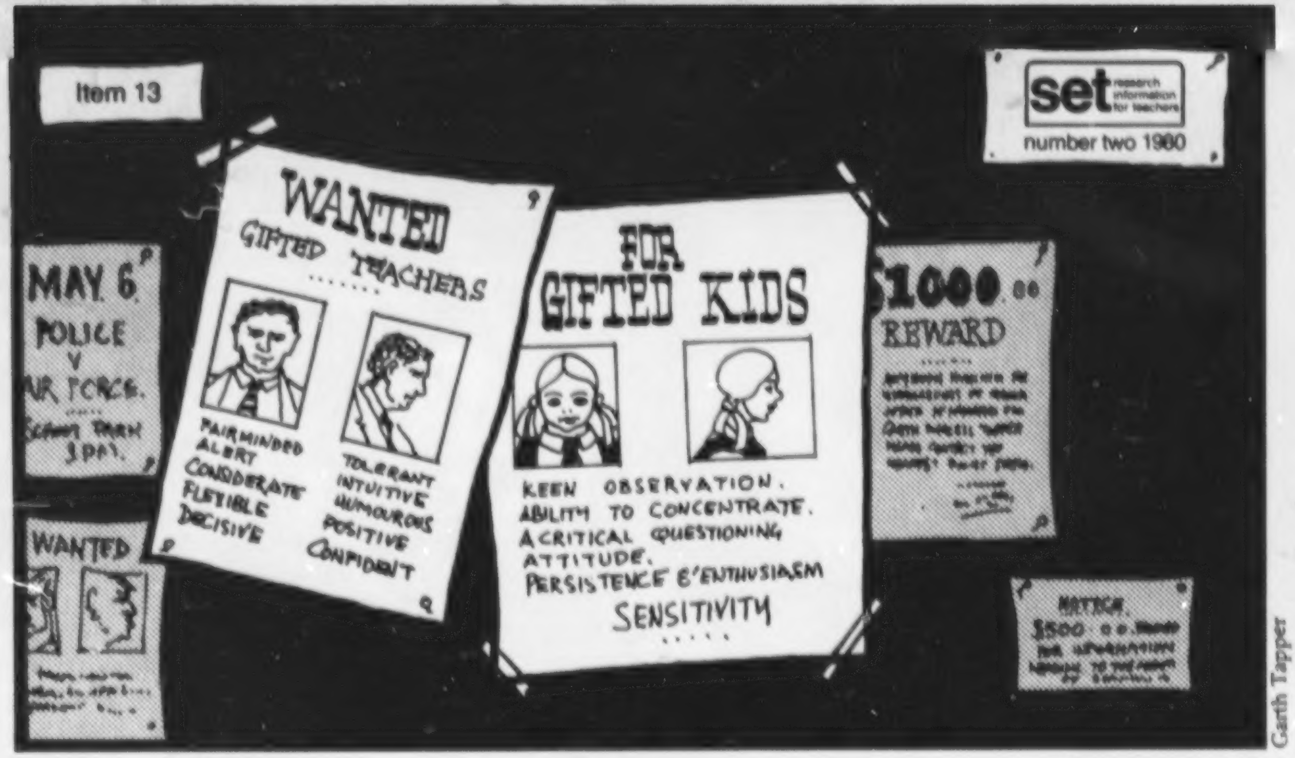
The Pupil deals with the problem of whether 'the groaning sounded like a foghorn with hiccups' is a metaphor or a simile and how to remember which is which.

The Teacher deals with such problems as, 'What work should Catherine do next? She knows about metonymy and synecdoche , but she gets metaphors and similes mixed up. We've got a computer programme for that, but it is a bit elementary, and Catherine is inclined to go to sleep if left to her own devices . . .'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FOR
GIFTED KIDS
KEEN OBSERVATION.
ABILITY TO CONCENTRATE.
A CRITICAL QUESTIONING ATTITUDE.
PERSISTENCE & ENTHUSIASM
SENSITIVITY
$1000.00
REWARD
NOTICE
$500

Garth Tapper

Wanted:
Gifted Teachers for Gifted Kids

By Neil Reid
NZCER

It is the right of every child to be educated according to his age, ability and aptitude: all pupils should be given the opportunity to develop their full potential. These principles have long been recognized by educators. But in order to achieve the goal of optimum development it is necessary to make special provision for those children who depart from the norm. Although resourceful and hard-working teachers provide for a wide range of abilities in the average heterogeneous classroom, there are some children whose needs just cannot be met in this way. The particular needs of retarded and backward children have been recognized and, by and large, satisfactory alternative provisions have been made for them. On the other hand, very able children may also require alternative or supplementary provisions and in many instances their rather special needs are overlooked because the 'problem' is much less obvious. The gifted child may never get to exercise his true abilities because he is never challenged to. Children can be educated according to their abilities and aptitudes only if the extent and nature of these are known.

Classroom teachers have a vital part to play in the recognition and nurture of exceptionally able children. In this they have four major roles to play. First, they must understand the nature of giftedness and be vigilant in their search for evidence of outstanding abilities or exceptional talent among their pupils. Secondly, once detected they must discover the precise nature and extent of these gifts. Third, they must adjust their approach and develop teaching techniques designed specifically for the gifted and, if necessary, supplement their own knowledge and skills by utilizing a variety of resources. Lastly, they must be sensitive to the problems which occasionally accompany exceptionality, for, without wise guidance and understanding from their teachers, many of these children will never attain their full human potential.

Who are the Gifted?

Identification

There is always the perennial problem of identification. And, in this, the teacher still has a major role to play in identifying pupils in his or her charge who may be gifted in one or more ways. It is the teacher who is in daily contact with the class who is (or should be) most likely to recognize children whose potentialities are greater than their achievements.

The teacher in the junior school will find it necessary to gather relevant information from parents (and possibly kindergarten and/or preschool teachers and supervisors) as no school records will exist at this point, and parents may not realize that their child is anything but normal. The teacher at this level, and at all succeeding levels, should also, through keen observation and a thorough knowledge of the traits and behaviour which characterize gifted children, be alert for evidence of unusual achievement, insatiable curiosity, odd interests, precocity, and so on. There are plenty of lists of one kind or another available of traits and characteristics that are clues to exceptionality. Here is a rather simple one:

Some Characteristics of Gifted Children

Early facility in reading and language development — often has a mature vocabulary compared to classmates.
Keen observation — will notice and want to discuss points other children miss.
Ability to concentrate — stays at a task longer than other children because of keen interest in a topic.
Ability to relate cause and effect.
Capacity for abstract thinking.
Ability to generalize from a set of facts.
Ability to organize and relate experience.
Ability to see the elements of a problem.
Resourcefulness and imagination.
Tendency to think logically.
Desire for clarification and exchange of ideas — likes to discuss and can tolerate varying points of view.
Ability to learn a process quickly — but frequently not interested in pursuing the topic until the fundamentals have been mastered.
Proficiency in music, art, drama, dance.
A critical, questioning attitude.
Interest in and enthusiasm for a variety of pursuits — will often have many hobbies.
Persistence and enthusiasm.
Sensitivity.
Empathy.

Adapted from Helen M. Woodliffe 'Education of the Gifted'. *Orbit 41*, Feb. 1978.

Naturally, not all gifted children will possess *all* of these attributes, but they will have a significant number of them. Further, the traits will be exhibited in widely *different* combinations; gifted children are not a homogeneous group, but a collection of unique individuals.

Checklists for identification also abound. Some are highly structured, for example, the Renzulli-Hartman *Scale for Rating Behavioural Characteristics of Superior Students*, and, if used properly, require a good deal of time. But, it is time well spent.

Some teachers may prefer to use something a little less structured, but potentially just as effective, for example, a simple list of the following kind:

Identification — Teacher Nomination

The classroom teacher nominates the:
  Best, most able pupil scholastically
  Child with the largest vocabulary.
  Most creative and original child.
  Child who takes the leader's role most often.
  Most scientifically oriented pupil.
  Child who does the best critical thinking.
  Able child who is the biggest nuisance.
  Best motivated pupil.
  Child the other children like best.
  Child who attains the highest rankings on standardized achievement tests.
  Brightest child who is non-European.
  Pupil whose parents are most concerned about improving his educational progress.

Adapted from J.C. Gowan 'How to Identify Students for a Gifted Child Program' *Gifted Child Quarterly*, No. 19, Fall, 1975.

It is interesting to note the seventh point — the able child who is the biggest nuisance. Such a point would not normally have been found in lists ten years ago. A similar entry appears in a list of characteristics in a document on gifted children prepared for the 1977 conference of the New Zealand Post-Primary Teachers' Association. It reads, 'Troublesome behaviour may arise in some pupils, manifested by such symptoms as: (a) restless or rebellious behaviour, (b) difficulty establishing friendships with peers, (c) associating with atypical and non-conformist people, (d) excessive difficulty in communicating with parents, and (e) extreme sensitivity. It is also generally known that a large number of intellectually gifted children have been identified by school psychologists after being referred for disruptive behaviour or 'being a problem' in the classroom.

Further up the school the official records will be available: school records, standardized achievement (and possibly group intelligence) test scores, anecdotal records kept by previous teachers; reports to parents; and so forth. These should be carefully perused and what is on them verified, if possible, with teachers using their own informal measures, observation, questioning, interviews, etc. Unusally high performance will indicate the possibility of intellectual giftedness, but a low performance does not necessarily mean that a child is not gifted — it may mean other things and other strategies of identification will have to be employed. And let us not forget that gifted children will still display weaknesses in some areas of school work and that these must be diagnosed as early as possible. Professional assistance, such as a full psychological examination, should also be requested by the teacher when in doubt. Sometimes the kind of information sought is regarded as confidential and it has a habit of being buried in files, inaccessible and unused. It must be ferreted out. Since it is the teachers who are in personal contact with all the children, it is they who are in the frontline, and it is they who are most likely to identify the gifted children in their charge. However, teachers have a wretched record of identifying gifted children accurately. A recent review of research on this topic reported a median of 45% accuracy for teachers identifying intellectual giftedness, the area we know most about! But this is where a teacher's intuitive judgement **alone** is used. In combination with other methods of identification, such as those outlined above, the accuracy of the identification by teachers increases dramatically. The message is abundantly clear: the use of **multiple methods of identification** and a **broadened conception of giftedness** (to include the whole wonderful spectrum of human talents) are to be encouraged.

Identification procedures select out a group of children who possess highly advanced complex ability. Such procedures also serve to alert teachers to the true potential of individuals and help them to plan more effectively for the gifted than would be the case without systematic identification. Identification also has proved of value for older children who have not been fully aware of their abilities and who have been poor achievers or problem students. They suddenly see themselves in a different light.

But identification **per se** does not improve learning. Children who are identified and placed in regular class programmes show no change. Nor does identification as 'gifted' change home conditions. Studies of successful and unsuccessful gifted people have shown that achievement by the gifted is affected by factors other than high ability, including health, motivation, and opportunities afforded by home and school. Identification cannot reduce the impact of cultural or language deprivation, restricted learning opportunities, poor parent-child relationships, lack of interpersonal communication and other negative factors.

Teacher and Peer Attitudes

Teachers with one or more gifted children in their classes will be well aware of the additional burdens created, the necessity for additional preparation, more frequent feedback and assessment, the provision of discussion and consultancy opportunities, and so on. They must be prepared to accept the challenge of the gifted child in heterogeneous classes. They must also be prepared to examine their own feelings about these children and about themselves. While it is generally known that intellectually gifted children progress most satisfactorily with teachers who are of superior mental ability and who have wide experience and knowledge, many classroom teachers will know very well that they do not fit this accepted ideal. Many primary and secondary teachers will be weak in certain areas or spheres of knowledge, and it is very difficult to 'put one over' gifted pupils, should the teacher be misguided enough to try. Intellectually gifted students know when you are faking and their superior reasoning abilities and questioning attitudes can cause insecure and inexperienced teachers some uncomfortable moments. For the authoritarian teacher, the curiosity and almost incessant questioning typical of gifted children can be a constant source of irritation. It is suggested that only teachers who know their own limitations can make an intelligent assessment of their ability to work with gifted pupils. It will also be necessary for teachers to guard against favouritism.

Their attitude towards gifted pupils should, of course, be favourable, but not at the expense of the other pupils in the class. This has a direct bearing on teacher/pupil relationships. If the teacher endeavours to devote extra attention to these pupils, to give them additional privileges such as going off to the library, or even to get rid of the 'nuisances' by giving them odd jobs both inside and outside the classroom, the gifted child is likely to become unpopular with his peers who will, in all likelihood have labelled him or her already as 'brains', 'egghead', 'professor' and some less savoury names. Many pupils have the same prejudiced and incorrect notion of intellectually gifted pupils as have their parents.

Yet, as we know from the findings of research, for example from the studies of Terman and Oden begun in 1921 and still continuing, and from the characteristics of gifted children (such as those in the lists cited earlier) the true picture which emerges is the very *opposite* of the popular view.

Should a teacher be unlucky enough to be in charge of a top stream, an A-level class (or whatever the current terminology is for the intellectually able group) in a school that is antagonistic or apathetic about provision for gifted pupils, he or she can expect a certain degree of hostility from some colleagues — and indifference from others who are convinced, again quite wrongly, that gifted children (since they are so smart) can teach themselves. The teacher's role in this situation is to endeavour to change attitudes: not an easy task as we know from experience. And yet this is the single most important thing that those educators who are concerned that our gifted children are given the opportunity to optimize their potential, can do. They must work towards changing prevailing attitudes — those of teachers, the public at large, and, in the senior school anyway, those of the gifted child's peers.

Resources

Teachers may also find themselves in the position of fighting for additional resources for their gifted pupils. Even such essential items as dictionaries and encyclopedias at the appropriate level of complexity and readability are difficult to come by in many schools and it may be necessary to raid the staff, teachers' college, public or university libraries from time to time to obtain the range and kinds of reference and text books required. It will also be necessary for the teacher of the gifted to assiduously cultivate the school librarian and audio-visual resource teacher as allies to have them bend the rules a little so that individuals and small groups of gifted pupils may work together in the library or elsewhere without class teacher supervision.

Increasingly, we have come to recognize that the school, as it is now, is a restrictive environment for our gifted students. No one school has all the resources; no team of teachers possesses the knowledge, the skills, the capabilities for catering for the very diverse abilities of these exceptional children. If teachers cannot tackle the task of nurturing and guiding the gifted on their own, who can they turn to for help?

The teacher should view the community as a resource. There is a wealth of talent there just waiting to be tapped. In every street there are a dozen people who have expertize in at least one specialized area. One of the largest and most willing talent pools is made up of the recently retired. Here are capable, skilled and experienced men and women, many of whom would make admirable mentors for an individual student or a small group of children. And, best of all, they have the *time!* This idea has been raised with many groups from time to time and the notion is generally considered to have merit, although it is acknowledged that it may be difficult to contact suitable resource people in the first instance, gauge their suitability as appropriate adult models and also to convince them that they would have something to offer bright and eager youngsters. The role of the teacher in this situation would be one of talent scout, judge of character, contact and liaison man, all rolled into one. Why not start a talent search or resource register in your community soon?

Who are the Gifted Teachers?

From the embarrassingly meagre body of research on the characteristics of successful teachers of the gifted the early development, which, combined with other information and observations, might indicate that a child is gifted.

The other side of the coin is the child whose difficulties and 'hangups' are hidden from the teacher. Parents do not want to reveal their own shortcomings and will not tell the teacher that they are having problems which may stem from the gifted child's frustrations. Maladjusted or disturbed older children are often quite adept at disguising their difficulties and worries at school and may give vent to their frustrations at home. It is vitally important that the teacher knows about this. And nowadays with the increasing number of broken homes and solo parents, the teacher must be on the lookout for changes in mood, work habits, cooperation and so on. With all their resilience, adaptability and use of superior abilities to cover up difficulties, gifted children are also vulnerable to disruptions of this kind. Information about home circumstances must be communicated to teachers, fully and frankly.

Withdrawal and Isolation: Supporting Gifted Children

Some gifted children are naturally withdrawn, but more often than not, the child will have good reason for non-participation. Frequently his frantic hand-waving in class to supply an answer to the teacher's question will be ignored as the teacher (quite rightly) endeavours to spread questioning around the class. And the teacher knows the gifted child is certain to have the correct answer and probably in far more detail than is wanted — after all, the teacher has a lesson to get through and a syllabus to cover! If the child gets this kind of treatment too often, the odds are that he or she will simply choose *not* to participate. But let us be fair and recognize the teacher's predicament too.

Teachers may also care to reflect on how often they confront a bright child with a 'no-win' situation. In class, after unsuccessful attempts to elicit a correct answer, the teacher, desperate to keep the carefully planned lesson moving, is forced to call upon the pupil he or she knows will have the response wanted. The answer is given to the teacher's satisfaction; the lesson proceeds leaving the majority of the class bewildered and uncomprehending — and antagonistic towards the able child. Repetitions of this behaviour ultimately put the child off-side with his peers. But, if the child chooses *not* to answer the teacher's question, and the teacher knows the child knows, the child is frustrating or annoying the teacher. This little scenario is played time and again in the heterogeneous classes in many of our secondary schools. No wonder these intellectually able students feel 'used' and unhappy with the system!

It is also a fact that gifted children frequently *choose* to work on their own. This may be regarded mistakenly as deliberate isolation, withdrawal or an inability to get along with others. Yet many gifted children have become quite accustomed to these particular circumstances from a very early age since they work more quickly than their peers and must inevitably work on their own for at least part of the time.

If, however, a child is a true social isolate, then the teacher may have to encourage group participation. But this must be done in a subtle manner, without undue pressure, and may need to be in non-academic pursuits, outside the classroom, and possibly outside the school altogether. Gifted children in this 'isolate' category can be sensitively encouraged to appreciate the abilities of others, and to face up to their own limitations in certain areas. Teachers should never lose sight of the fact that these gifted students are children first, with the same basic needs as other children. They should not be deprived of their precious childhood by forcing them to maturity, like exhibition hot-house blooms, before their social and emotional development allows.

What Are We Doing For Gifted Children?

All teachers who are concerned that their gifted students develop more than a small measure of their potential for learning should be agitating for action and be applying pressure on the appropriate authorities to provide additional assistance. Extra teachers, smaller classes, additional resources are provided fairly readily for those pupils at one end of the ability scale: the mentally retarded, the slow learners, and so on. The same arguments applied to the other end of the scale get a poor response. Again, it is a matter of changing entrenched attitudes and demolishing hoary myths and beliefs about the gifted. Teachers of gifted pupils should use every available opportunity to stress that these children are being shortchanged by the present system. The success that organizations such as SPELD have had in raising the public's consciousness, and more importantly perhaps, the awareness of politicians should be noted; there is a lesson to be learned. It would appear that until pressure can be brought to bear where it seems to count the most, that the struggle to get a fair deal for gifted children will continue for some considerable time.

Notes

For lists similar to **Some Characteristics of Gifted Children,** but which may be more suitable in certain circumstances see, for example, in New Zealand **Set,** 1976 No. 1. and the Australian **Set,** 1979 Special Edition, 'Gifted Children: Do we Deserve Them?' by Neil Reid; Sagar's (1977) 'Profile of Giftedness', in **Education** Vol. 26, No. 5; and Collis's 'Helping You to Recognise Gifted Children', in **National Education,** Feb, 1980.

The Renzulli-Hartman **Scale for Rating Behavioural Characteristics of Superior Students** was reprinted in New Zealand **Set** 1976, No. 1. This scale has now been modified for junior school pupils.

Learning and Teaching: Product or Process?

For an extended coverage of these points see Barbe, W.B. and Frierson, E.C. 'Teaching the Gifted — A New Frame of Reference' in **Education,** April, 1972.

Further Reading

Torrance, E.P. 'Creative Teaching Makes a Difference' in Gowan, J.C. Demos, G.D. and Torrance, E.P. (Eds.) **Creativity: Its Educational Implications** New York, John Wiley and Sons, 1967.

Nelson, J.B. and Cleland, D.L. 'The Role of the Teacher of Gifted and Creative Children' in Witty, P.A. (Ed.) **Reading for the Gifted and Creative Student** Newark, International Reading Association, 1971.

Cox, A. 'Teaching Gifted Students in Regular Classrooms' **Teacher,** November/December, 1979.

Gold, M.J. 'Teachers and Mentors' in Passow, A.H. (Ed.) **The Gifted and Talented: Their Education and Development** 78th NSSE Yearbook, Chicago, University of Chicago Press, 1979.

Rice, B. 'Going for the Gifted Gold' **Psychology Today,** February, 1980.

generalization can be made with some assurance that gifted students need gifted teachers. A list of desirable characteristics, gleaned from the research literature, looks like this:

Distinctive Qualities Considered Desirable in a Teacher of the Gifted

- Fairness
- Tolerance
- Modesty
- Personality
- Goodwill
- Alertness
- Intuition
- Resourcefulness
- Friendliness
- Enthusiasm
- Wide interests
- Proven teaching ability
- Understanding
- Consideration
- Impartiality
- Versatility
- Patience
- Sense of humour
- Common sense
- Democratic attitude
- Intellectual curiosity
- Creativity
- Imagination
- Flexibility
- Constructiveness
- Thoughtfulness
- Positiveness
- Decisiveness
- Vigour
- Intelligence
- Self-confidence
- Sensitivity
- Maturity

It would be a rare person who possessed even 50 percent of these. And, on reflection, we would probably agree that they are traits that we would want *all* teachers to have, not just the teachers of the gifted. We cannot get away from the fact, however, that it is the teacher who plays a very big role in the school — he or she is the key to effective learning. It is the teacher who shapes the environment which inspires or destroys self-confidence, encourages or suppresses interests, develops or neglects abilities, fosters or buries creativity, stimulates or discourages critical thinking and facilitates or frustrates achievement.

Does the role of the teacher of the gifted differ in some substantive way from the role of the teacher in general? Both should share the same spectrum of desirable traits, although the successful teacher of the gifted would probably have more of them, and to a greater degree, particularly intellectual aptitude and creativity. Maybe the special problems associated with teaching the gifted are simply the problems of dealing with the tremendous range of individual differences?

The gifted child has indeed a rather rare combination of characteristics which he or she brings to learning and the teacher is forced to react and respond to those characteristics. If we subscribe to a philosophy of respect for individual differences then there can be no doubt that the teachers' roles must vary according to the attributes of the pupils in their charge. Since these children are different from the norm they require *different* treatment.

There has been belated awareness that teaching the gifted may mean more than providing enrichment, or the expectation that they will complete work in a shortened time span. Gifted children may actually have different learning styles and patterns from the normal child. Now, if this is the case, we are asking teachers not only to teach more widely, more deeply and more rapidly, but also to teach *differently* as well. And, in this task teachers must be the facilitators of learning, rather than the directors. They probably need to be less product-oriented and more process-oriented. They need to be learner-participants rather than leader-participants and be prepared to teach by example, involving *themselves* in the learning process. This distinction requires some elaboration.

Learning and Teaching: Product or Process?

Traditionally, teachers have been more concerned with the product of learning, rather than with the process. They have stressed the possession of knowledge rather than the projection of knowledge. Teaching approaches have been geared to producing tangible end results, results which are most clearly seen in test scores, and content has been presented in logical or in highly sequenced form. Teachers will remember how many times they were told during their training, and subsequently, to go from the simple to the complex, from the concrete to abstract, from the known to unknown, from cause to effect, from singular to plural, *ad nausem*. Does this pattern of teaching fit the gifted? It is very doubtful. This mode of teaching, which may work well enough for average pupils, is unlikely to have much appeal for gifted children, and may result in them becoming 'switched off' and/or chronic underachievers. No doubt many of them learn to adapt, but in doing so inevitably function well below their potential.

By contrast the process-oriented teacher will be concerned with *how* gifted pupils learn. When teaching average children the bulk of the teacher's time and effort goes into developing skills which become the tools for exploring and opening up new fields of knowledge. For the intellectually gifted, however, it is usually possible to introduce material at the exploratory level since they will have already acquired most of the tool skills.

Product-oriented teaching necessitates: (i) content mastery, (ii) sequential presentation of material, (iii) careful pre-planning for the smooth flow of lessons, (iv) teaching which is geared to identifying difficulties so they may be overcome, and (v) quantitative assessment as an indicator of what was learned. This sort of structured approach is required in order that the average pupil may learn and retain the vast quantity of information he or she is being exposed to. The classroom in which such teaching takes place requires a leader-participant. The teacher is there as the fount of all knowledge: the teacher can answer all questions or direct children to an answer. The direction of learning is the same for all pupils and the hallmarks of the teacher's success are how much has been learned and how rapid the progress has been.

The role of the teacher in the process-oriented classroom is rather different. Required are: (i) a teaching approach which introduces content material at the exploratory level, (ii) a contagious enthusiasm for learning on the teacher's part, (iii) intentional interruption of the lock-step, sequenced development of ideas, (iv) teacher involvement in the learning process: the teacher becomes a learner-participant, teaching by example to a large extent, (v) the teacher evaluates his or her own and the pupils' involvement in the learning process; the degree of involvement is an indicator of success. In this pattern of teaching the gifted pupils choose their own direction. Since material is presented at the exploratory level they may choose to work independently with established facts along preconceived lines, or maybe work towards applications or the discovery of novel situations. This type of approach, since it encourages individual direction, is also likely to foster creativity, if rigidity is absent and if a supportive environment is provided.

So, it is likely that successful teachers of the gifted may have to acquire a radically different perspective and a change of role from the one they have habitually adopted. Changing one's teaching style in this way, particularly for those in mid-career who are regarded as skilled, master teachers (of the majority of children) is not an easy task. In fact, in the heterogeneous, unstreamed classroom in vogue today the poor teacher may have to become several teachers at once to cater for the diversity of learning styles and patterns.

Programme Coordination

In urban areas where there are likely to be concentrations of gifted children, it will fall to the lot of one teacher, or perhaps a small group, to coordinate activities wherever possible to avoid wasting precious and scarce resources of material and personnel. It is an advantage if gifted children from a number of schools can be brought together, perhaps once a week, to share ideas, experiences, engage in enrichment activities, find congenial friends and generally have fun and learn together. Of course, this is very like what many parents have organized with the 'Explorers' or 'Discovery' clubs and other activities run by various associations for gifted children in many cities. It would be good if more links could be forged between schools, and also between schools and these associations.

Those readers employed or involved in the education system may suspect that what is being advocated is idealistic rubbish. But attempts are being made in Auckland to coordinate the gifted children's programmes which have been initiated in a number of schools, with a good deal of success. Advisers on gifted children have been appointed in some urban centres, but to date they are few and far between and tend to be temporary. Some advisers in the past encountered a good deal of antagonism towards special schemes for gifted students which smacked of elitism and undeserved favouritism in the view of some teachers. Occasionally, professional jealousy must be overcome and teachers whose lessons have been wrecked by removing their 'star' pupils will have to be placated. A cooperative atmosphere and good working relations are essential if any scheme is to flourish.

In other cases where planned programmes depart from established procedures, there may need to be some revision and/or modification of administrative and organizational practices, particularly where the programmes require the student to move beyond the school boundaries. And when anything which does not fit the 'rules' is tried, there are all those little practicalities like accidents, insurance, time out of school during school hours and so on which have mammoth ramifications when something goes awry. Coordination of effort in the provision for giftedness ought to be fostered and developed at more than just the local level. In New Zealand a clear statement of Departmental policy is urgently required and suitably qualified personnel recruited to ensure that such policy is implemented. At present it is left largely to a handful of enthusiastic teachers at the school level to carry on the good work.

A Class Environment That Fosters Creativity

Teachers of the gifted will find that to bring out the very best these students have to offer will entail providing a classroom climate which promotes self-esteem and offers safety for creative and cognitive risk-taking. *Every* child should have a sense of security and be able to feel that he can try out new ideas and ways of doing things without being put down by the teacher. Many creative children in non-supportive classrooms will feel unable to express themselves freely through fear of teacher dissapproval, of criticism, of failing, of not being popular, of making mistakes or not meeting the teacher's and/or parents' expectations. And there are perhaps a substantial number of these repressive influences and pressures in too many classrooms. New ideas, divergent thinking and novel responses should be welcome in any classroom.

One of the paramount lessons that could be learned by any gifted child in such a classroom is that there is usually more than one way to achieve an objective and that the direct path, while efficient, may not be the most interesting. Intellectually gifted and creative children are willing to take risks in a warm, supportive classroom climate — they will share ideas, experiment, reveal their feelings, define and attempt to solve problems and discover that they can learn from their mistakes; in other words, they will not fear to be themselves. Again, not all teachers can tolerate this kind of classroom which may have the appearance of being in a constant state of chaos and will probably have more movement and be noisier than is usually accepted. It is obviously not acceptable to everyone and some modification would be necessary to suit individual teachers without too much being lost.

Parent — Teacher Collaboration

Teachers should encourage parents to visit the school for discussion. This applies to all parents, not just the parents of gifted children. Yet it is usually very difficult to accomplish and the reasons are not hard to find. Teachers usually end up preaching to the converted. However, parents of many of our gifted children do not come from the middle or upper income brackets; they are not exclusively European nor from the white-collar or professional groups, and many of these parents are very wary of the school. The parents of gifted offspring who have a low status job, low income, little education themselves, or who are members of a minority ethnic group and so on, often wish that they had a more 'normal' child. In fact, it is sometimes expressed in exactly this way, as though the child was some kind of freak who would never fit in with the life style and circumstances of the parents.

On the other hand, teachers also have to be on their guard against parents who wish to show off their child; who want to exaggerate his or her accomplishments and who often provide 'false' information — not intentionally of course! But, when the child first comes to school, the parents can provide vital information — about when the child first walked, talked, showed an interest in words, numbers and reading, began drawing and so on — and such information provides clues about unusually rapid or